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MARYLAND

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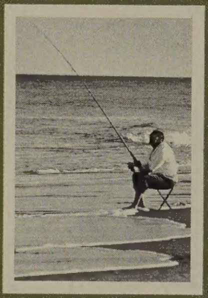

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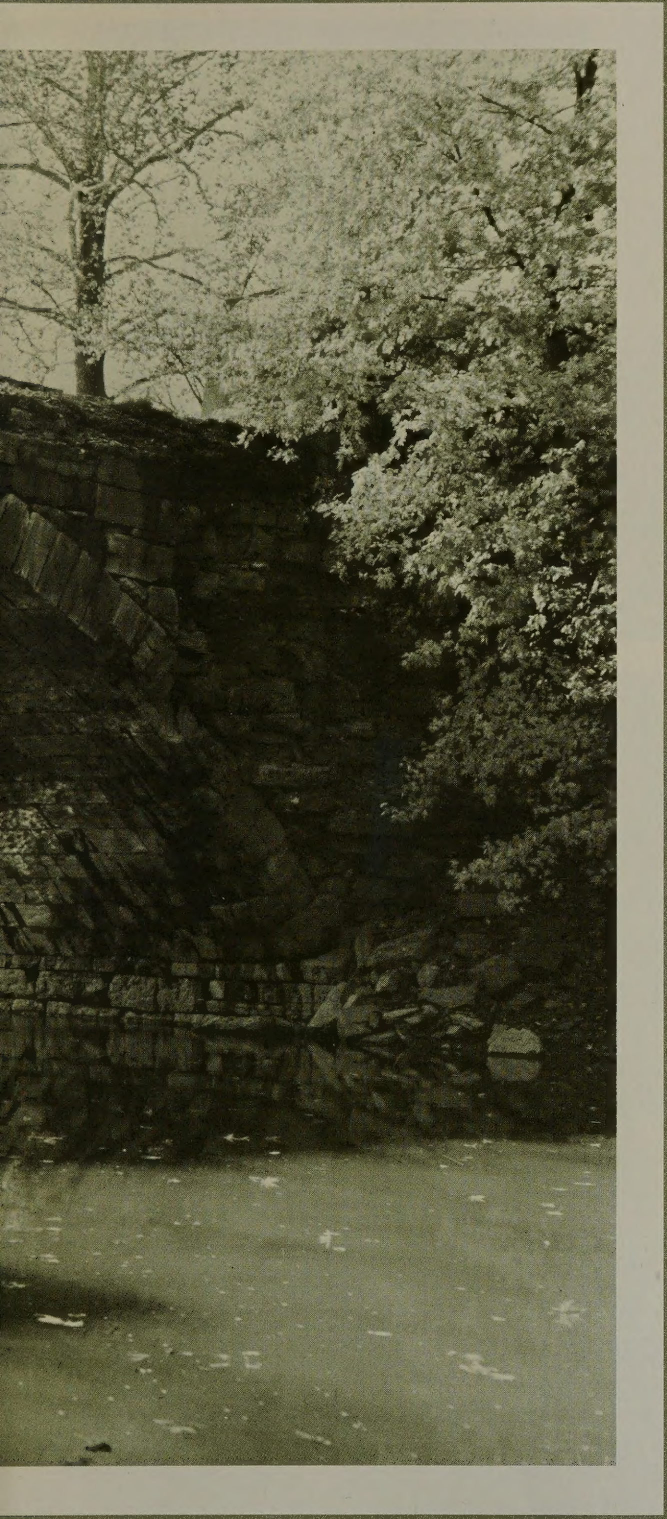

The purpose of this booklet is to bring a new awareness on the part of the American people of our rich natural resource heritage, its history, its present, and its future. To know our land is to love it and cherish it and protect it from the ravages both of nature and man.

Walter J. Hickel

Secretary of the Interior

(Left) Reflections of the past are mirrored in Tonoloway Creek. This aqueduct carried water of the Chesapeake and Ohio Canal.

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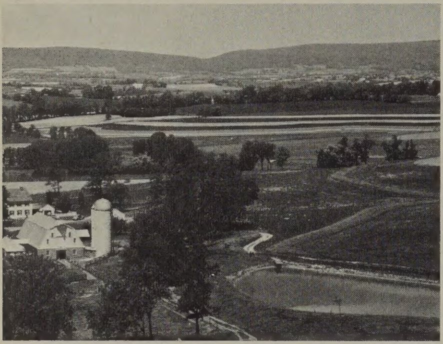
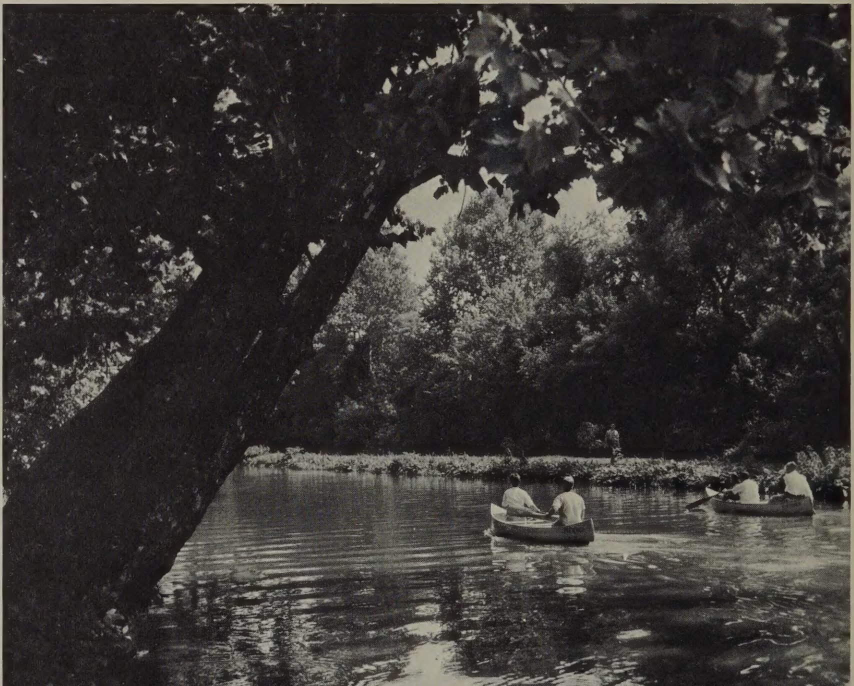
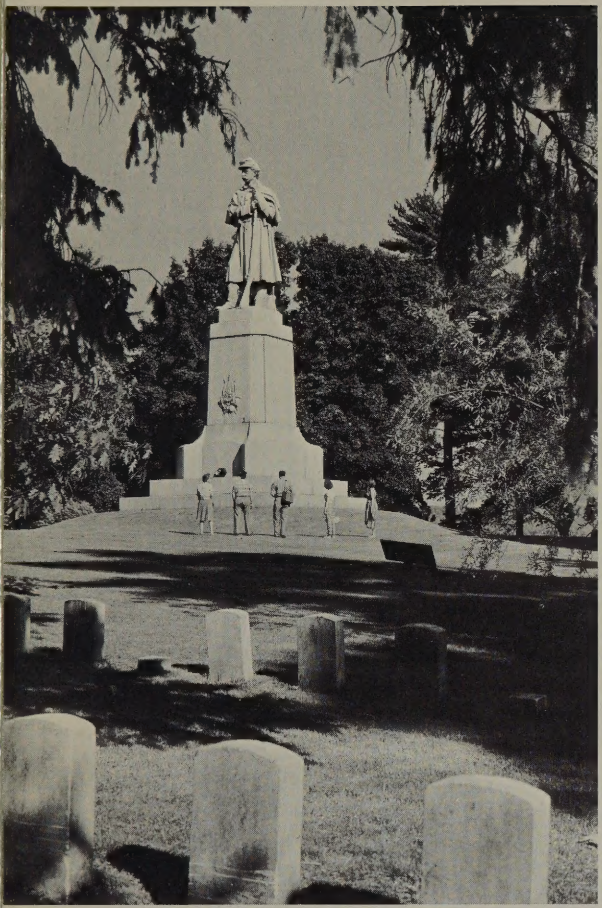






Study in Contrast

For someone who has sailed on the Chesapeake Bay and hiked in the Appalachian Mountains; seen the huge steel mill at Sparrows Point and traveled through the rolling country dotted with dairy and truck farms; enjoyed the colonial atmosphere of Annapolis and watched in amazement as the sprawling suburban areas of Baltimore and Washington, D.C. creep closer and closer together: Maryland appears a study in contrast. South of the Mason-Dixon line, Maryland is northern to southerners and southern to northerners. The one consistent characteristic of the State is that, as Capt. John Smith stated, it is a "delightsome" land.

Early Settlement

In 1632 Charles I of England granted a charter to Cecil Calvert, second Lord Baltimore, for the land now called Maryland. Though Spanish explorers had traveled along the shoreline of Maryland in the 16th century and the Dutch and English traded here early in the 17th century, no Europeans had settled permanently.

Baltimore, a Catholic, set up an office in London promoting settlement of the new land by Anglicans and Puritans, as well as Catholics. On November 22, 1633, 200 people set sail on the *Ark* and the *Dove* for the New World with Baltimore's brother, Leonard Calvert, governor.

The group arrived at St. Clements (now known as Blakistone Island) but decided to settle at nearby St. Mary's. The English treated with the Indians who sold their townsite and agreed to turn over their bark huts and fields and to vacate the land.

William Claiborne, an English trader, had established headquarters on Kent Island in the Chesapeake Bay long before the Calvert settlers arrived and he would not admit Lord Baltimore's jurisdiction over this area. A minor conflict took place. However, Cloberry and Company, Claiborne's backers, sent George Evelin to replace Claiborne in control of the island, and Evelin urged the islanders to submit to the authority of the Calverts. He also persuaded Governor Calvert to send an armed expedition to "reduce" the island settlement.

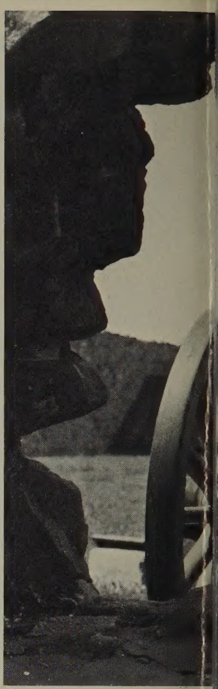
The conditions of settlement set by Baltimore promoted a system of large manors. Each person who came at his own expense was granted 100 acres of land and for transporting five settlers between the ages of 16 and 60, one would receive 2,000 acres. (This was reduced to 1,000 acres after the first year.) A wealthy colonist who paid passage for 10, 20, or more settlers was therefore entitled to a very large tract of land. Many times rights were granted that made the owner of a plantation very similar to the lord of an English manor. The plantation owner often had the right to numerous fees and fines, could collect rent from his tenants, and could administer justice in certain cases. All who held land, whether a manor or 50-acre tract given to indentured servants, paid an annual rent to the Calverts.

A struggle for the power of initiating laws began in 1635 when the First General Assembly passed a number of laws which Lord Baltimore rejected, stating that the assembly did not have the power to initiate legislation. In turn, the next assembly vetoed the laws which Lord Baltimore sent from England and passed others. Eventually, Lord Baltimore did concede some initiating powers to the assembly while reserving some for himself.

The English Civil War

The war in England between the Puritan Parliament under Oliver Cromwell and the Stuart royalists directly affected Maryland, creating a rather confused political situation.

Fort Frederick, west of Hagerstown, was built in 1756 as a defense against the French and Indians. (Right) Citizens in colonial garb re-enact a chapter in history at the reconstructed fort.



In February 1645, Capt. Richard Ingle, an ardent parliamentarian, landed an armed force and seized St. Mary's. About the same time, William Claiborne regained control of Kent Island. Governor Calvert asked for help from Virginia in order to maintain control over his province, and Virginia responded by sending Capt. Edward Hill to capture certain invaders. But Hill stayed in Maryland with a mysterious commission as governor. When Hill called the assembly into session, Governor Calvert appeared with an armed force and captured the group.

In 1647 Governor Calvert died, having suggested that Thomas Greene be his successor. Lord Baltimore replaced Greene with William Stone, a Protestant, and gave a majority of the council positions to Protestants. Baltimore also proposed an Act Concerning Religion which promoted religious toleration. Because of this new law, some Virginia Puritans migrated to an area along the Severn which included the present site of Annapolis.

When news came of the beheading of Charles I, Virginia immediately recognized Charles II. Greene, as acting governor, followed suit. Though this was later renounced by both

Governor Stone and Lord Baltimore, the damage had been done; Parliament sent commissioners "to reduce all plantations within the Bay of Chesapeake." Governor Stone refused to submit to the demands of the commissioners saying that the demands violated the colony's charter. Though the Puritans gained complete control of Maryland, Cromwell himself supported the rights of Lord Baltimore as proprietor of the colony.

In 1657 Lord Baltimore and representatives of the Maryland Puritans agreed to the appointment of Josias Fendall as governor. Under Fendall's guidance, the lower house of the assembly declared that it alone constituted the assembly. However, Philip Calvert arrived in December 1660 with a commission from Charles II, who had gained the throne, stating that he was governor and that all citizens were to cooperate in the re-establishment of the proprietary authority.

Relative peace and prosperity settled on the colony.

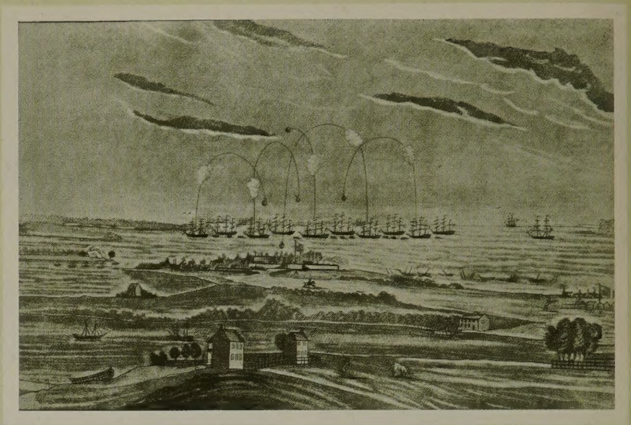
Atmosphere in Colonial Maryland

J. Thomas Scharf in his *History of Maryland* reports that "from the first . . . the backwoods was simply the unsettled region, removed from navigable water." The Chesapeake Bay and the many inlets and rivers of eastern Maryland provided easy routes by which the colonists could visit one another, as well as a means for transporting products to the market places of the world.

Early in Maryland's history, tobacco emerged as the major crop and it was used as a medium of exchange. However, during several years, overproduction resulted in a flooded market and low prices.

With the growth of trade came the passage of an Act for the Advancement of Trade. This unpopular act created customshouses through which all imports and exports had to pass and therefore ended the practice of shipping goods directly from the wharves of plantations.

In 1689 a government under royal control was established, though Lord Baltimore's rights as landlord remained intact. The first royal governor imposed a tax for support of the Church of England and moved the capital from St. Mary's to what is now Annapolis. Royal governors administered Maryland until 1715 when Benedict



Leonard Calvert renounced the Catholic faith and proprietary governing rights were restored.

American Revolution

Underlying discontent became manifest in 1768 when the Merchant's Committee of Philadelphia asked Maryland to join in a movement (started in New England) to ban imports from the Mother Country until the Townshend Acts had been repealed or revised. Though the ban was broken, it did bring about the repeal of the Townshend Acts.

In 1774 when news of the Boston Port Act reached Maryland, the nonimportation agreement was renewed. In addition Maryland boycotted any colony not joining in the agreement, suspended exportation and forbade lawyers to bring suit for anything due British merchants from Maryland residents. Robert Eden, governor of Maryland, reported that the citizens seemed determined to persist in this effort to support Boston "in spite of every inconvenience . . . and the total ruin of their trade."

The extralegal Provincial Convention which first met in June 1775, gradually developed into a provisional government. Each county elected five members annually to this assembly. Between sessions, power was vested in a committee of safety with members of this committee and of the Continental Congress elected by the Convention.

On August 14, 1776, a State Constitutional Convention met and adopted a Declaration of Rights and a State Constitution instituting a new government.

Throughout the Revolution, Maryland fought valiantly and earned the nickname "Old Line State." At the Battle of Long Island, Maryland troops covered the retreat of George Washington losing all but 96 of 404 men. In addition to heroic acts performed by State citizens on the battlefield, privateers sailing from the Chesapeake Bay constantly harassed the British.

At Annapolis the Continental Congress ratified the Treaty of Paris officially ending the war and accepted the resignation of Gen. Washington; a meeting held in Annapolis led to the Constitutional Convention of 1787.

From Maryland lands along the Potomac River was born the new Nation's Capital.

War of 1812

The foundations of our government were barely laid, when again Marylanders heard a call to arms. However, opinion about the War of 1812 was severely split. A newspaper, the *Federal Republic* of Baltimore, printed a denunciation of the conflict which kindled riots by some who favored the war. These pro-war riots prejudiced some causing them to support the antiwar Federalist party.

The Chesapeake Bay was invaded in February 1813, but little damage was done until August 1814 when a large British force was sent up the Patuxent and then overland toward Washington. The British routed the Americans at Bladensburg before marching on the Nation's Capital.

With victory over Washington fresh in their minds, the British headed for Baltimore, "the great repository of the hostile spirit of the United States against England." Scharf reports, "The city now became an active military camp. Those who could afford it sent their wives

(Far left and center) The bombardment of Fort McHenry inspired Francis Scott Key to write the "Star-Spangled Banner." (Right) The Battle of Antietam was one of the bloodiest encounters of the Civil War. Today Burnside Bridge is a favorite spot for those visiting the battlefield.

and children out of the city." Property was moved inland. Miraculously, Baltimore stood against the powerful British.

The defense of Fort McHenry in Baltimore inspired Francis Scott Key to write the "Star-Spangled Banner." He had watched as the fort was bombarded by British ships. With the ships out of range of the fort's artillery, the garrison was unable to answer the fire. Only when the incautious British ventured too close to the fort was the silence of the Americans broken. Key searched for sight of the Stars and Stripes throughout the night and during the early hours of the morning. Finally, he saw the flag waving majestically in the wind.

After the War

After the war, industry again began to grow. In the next 12 years, the National Pike to Ohio was completed, the Baltimore and Ohio Railroad and the Chesapeake and Ohio Canal were begun, and the Chesapeake and Delaware Canal was opened.

Baltimore was described by Gen. Nathanael Greene in 1783 as a "most thriving place. Trade flourishes, and the spirit of building exceeds belief. Not less than three hundred houses are put up in a year. . . . The inhabitants are all men of business." In the 19th century Baltimore continued to thrive.

However Baltimore's growing population was seriously underrepresented. The smallest counties in the State had a voice in government equal to the largest. Furthermore, some rural counties did not want to "place the great agricultural State of Maryland at the feet of the merchants, the bank speculators, the brokers, the lottery office keepers, the foreigners, and the mob of Baltimore." The recurring question of the proper representation of urban versus rural areas was temporarily solved in 1837 when Baltimore was granted six delegates, as many as any county was allowed.

Civil War

At the outbreak of the Civil War, there were almost as many free Negroes in Maryland as there were slaves. Maryland did not secede from the Union, though the State had strong Confederate sympathies. In general, citizens desired the maintenance of the Union but did not feel that coercion should be used against States wishing to secede.

Though remaining in the Union, Maryland was suspect. This distrust was heightened when a crowd attacked Massachusetts troops being moved from one railroad station in Baltimore to another. During the ensuing melee, 11 civilians and four soldiers were killed. The following night railroad bridges north of Baltimore were burned by police, the militia and citizens who wished to prevent further disturbances by making sure troops would not be moved through the city.

John Merryman, a lieutenant in the militia, was arrested for complicity in the action. Merryman's counsel petitioned Chief Justice of the U.S. Supreme Court Roger B. Taney (a Marylander) for a writ of habeas corpus. Thus began an important chapter in the development of United States law.

Taney issued the writ which was ignored by

Gen. George Cadwallader who claimed the authority to suspend it. The Chief Justice then rendered a written decision stating that the President was not empowered by the Constitution to suspend the writ of habeas corpus and could not empower others to do so. Though Lincoln disregarded Taney's ruling, modern legal opinion tends to support the views of the Chief Justice. (In 1863 Congress reluctantly granted the President power to suspend the writ of habeas corpus during the "rebellion.")

The bitter Civil War truly found brother fighting against brother. On May 23, 1862, the First Maryland Regiment, C.S.A., met the First Maryland Regiment, U.S.A., in the Battle of Front Royal, Va.—a defeat for the Union forces.

In September 1862 Lee's army occupied Frederick; Gen. George B. McClellan met the Confederate forces in the Battles of South Mountain and Antietam, forcing them to retreat across the Potomac. Again the Southern forces invaded Maryland in 1863 on their way to defeat at Gettysburg. In 1864 Confederate troops levied an indemnity of $20,000 on Hagerstown and $200,000 on Frederick, precipitating the Battle of Monocacy, a Union victory. Southern forces retiring from this battle passed close to Baltimore and Washington. Raiding parties destroyed communications with the North and burned Governor Augustus W. Bradford's house.

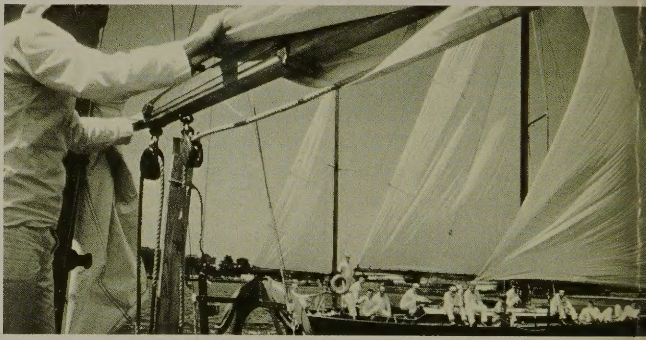
In 1864 the State adopted a new constitution which abolished slavery, anticipating the Thirteenth Amendment which was adopted nationally in a few months.

Post-Civil War

From 1869 to 1895 Arthur P. Gorman, president of the Chesapeake and Ohio Canal Company, managed State politics with the aid of I. Freeman Rasin. The two party system was effectually restored when the Gorman-Rasin machine was defeated in 1896.

Throughout this period Maryland commerce and industry grew. Rail and water facilities increased. Manufacture of men's clothes and shoes and boots continued. Not even the Baltimore fire of 1904, which caused an estimated $125 million of damages, did permanent harm to industrial progress.

UNITED FRUIT COMPANY



The State was the beneficiary of several large philanthropic gifts. George Peabody gave Baltimore a conservatory for music; Johns Hopkins, a hospital and university; Enoch Pratt, a library.

Contemporary Maryland

During the two world wars, Maryland contributed both men and materiel to the Nation's efforts. Particularly helpful to military success were the State's shipbuilding and aircraft manufacturing industries.

Now, as the Nation moves into the last part of the 20th century, Maryland is one of the

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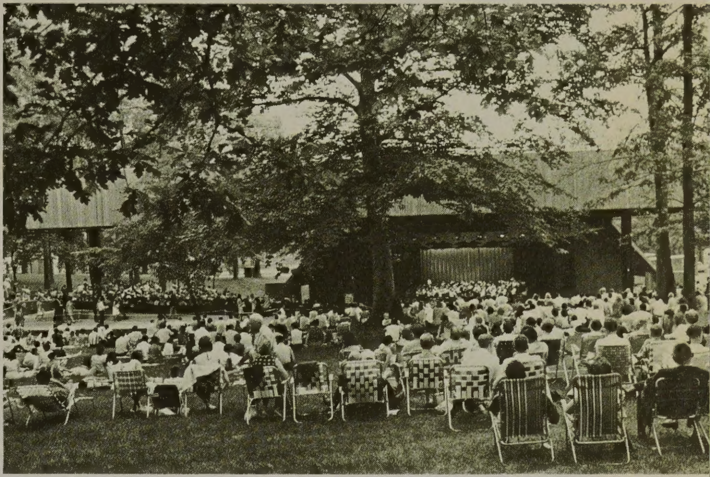


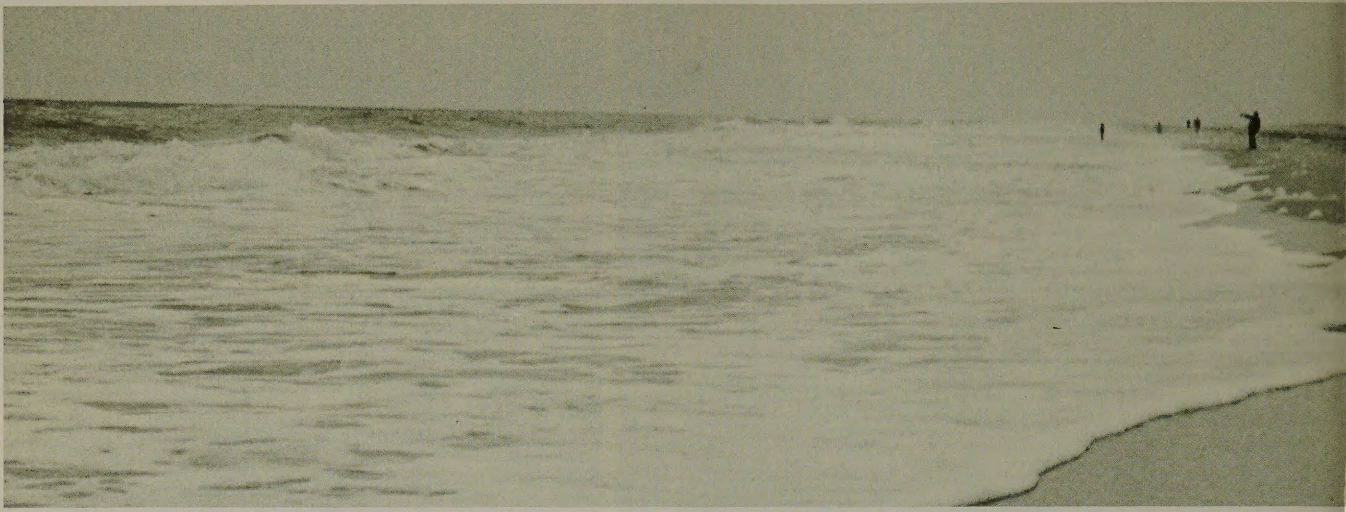
People who travel through Maryland are surprised by the great variety which the State displays. Ocean-going vessels docked in Baltimore capture the imagination of many a would-be-sailor. Midshipmen enjoy boating on the Severn River. A family camps at one of many State parks. Swimmers and sun-worshippers have fun at the beach. History buffs tour colonial Annapolis. The Merriweather Post Pavillion enlivens the musical scene.

States leading the way. Population growth in Montgomery and Prince Georges Counties has been phenomenal; per capita income has risen faster in Maryland than in the United States as a whole.

The Baltimore-Washington area is one of the Nation's major science centers. Such scientifically-oriented governmental agencies as the National Institutes of Health, the Atomic Energy Commission, Goddard Space Flight Center, Agricultural Research Center and the U.S. Bureau of Standards are located in Maryland. As these and other Government agencies employing highly skilled or professional people have grown, so have research and development companies which serve these agencies.

Though the population of the Old Line State is increasing and becoming more urban, Marylanders have not lost their taste for the out-of-doors. Each year more people escape from the cities to Ocean City and other seaside resorts to fish, sun and just plain relax; each year more and more people travel to the mountains when autumn shows its parade of colors.

But for Maryland to remain a land which brings out-of-doors pleasure to residents and visitors alike, State and Federal conservation agencies must have the support of the public. It is hoped that this survey of Maryland will encourage the growth of a public sympathetic to the need for thoughtful development and wise utilization of natural resources.



Physical Characteristics

Maryland spans three distinct geographic regions: the land rises gently from sea level across the nearly flat Coastal Plain, more rapidly across the rolling Piedmont, and abruptly across the parallel ridges and valleys of the Appalachian Mountains. The contrasting topography of these three regions reflects the different types of rocks and structures underlying the State which, in turn, are products of Maryland's long and complicated geologic history.

Appalachian and Piedmont Regions

The birth, development and eventual erosion of the Appalachian Mountains dominate Maryland's geologic history. All the rocks of the State, except the clays, sands and gravels of the Coastal Plain, are part of the Appalachian Mountain system; even the hills of the Piedmont are "mountains" in the geologic sense since it is relatively certain that this area was once a rugged mountain chain.

The most complex rocks in Maryland are located in the Piedmont region between the Frederick Valley and the fall line (an imaginary line roughly paralleling the coast that connects points where waterfalls occur). The original nature of these rocks has been changed so by heat and pressure that their early history has been obscured. Radioactive dating indicates that the Baltimore Gneiss, which crops out at several places in and near Baltimore, is the oldest rock formation now exposed in Maryland.

The contrasting topography of the various regions reflects the different types of rocks and structures underlying the State which, in turn, are products of Maryland's long and complicated geologic history.

It is at least 1,100 million years old. At some uncertain time, but at least 600 million years ago, the ancient rocks were deeply eroded and then flooded by a sea. Thick deposits of sand, limestone, mud, and volcanic debris accumulated on the sea floor and along its edges. Subsequently these sedimentary deposits and the rocks beneath them were elevated and crumpled by powerful, long-continuing mountain-building forces (culminating about 360–400 million years ago) which reconstituted them into quartzites, marbles, mica schists and other crystalline rocks that today bear little resemblance to the parent materials.

As uplift and deformation progressed, large masses of molten granite and gabbro welled up from deeper levels of the earth's crust and penetrated the developing mountain core. These once-molten rocks, variously modified by earth movements during and after solidification, are exposed along the Susquehanna River below Bald Friar and at many places in the vicinity of Baltimore.

In the Frederick-Hagerstown area of the Piedmont region, a different sequence of rocks was deposited on the ancient basement rocks. First, flows of lava and eruptions of volcanic ash blanketed the land's surface. Then about 600 million years ago, volcanic activity waned, and the land subsided to become a shallow sea. The oldest traces of life in Maryland are the fossils found in the sands, muds, and limey muds that for millions of years, accumulated on the sea floor. These marine sediments and underlying rocks were then elevated and tightly folded by mountain-building forces. The upturned edges of resistant quartzite beds (ancient beds of sand) form Catoctin Mountain, South Mountain and Elk Ridge; folded limestones floor much of the fertile Frederick and Hagerstown Valleys; and metamorphosed volcanic rocks occur in parts of Middletown Valley and eastern Frederick County.

No sooner had this earliest chain of mountains been raised than erosion began wearing it down. Tremendous volumes of gravel, sand and mud were washed from the highlands and deposited as alluvial fans, deltas and coastal marine beds that collected in a subsiding, partly submerged lowland to the northwest. The layers of red and brown rocks seen today in the mountains of the western counties accumulated as sediments in this basin some 250 to 400 million years ago. Vegetation that thrived in coastal swamps of that period exists today as seams of coal.

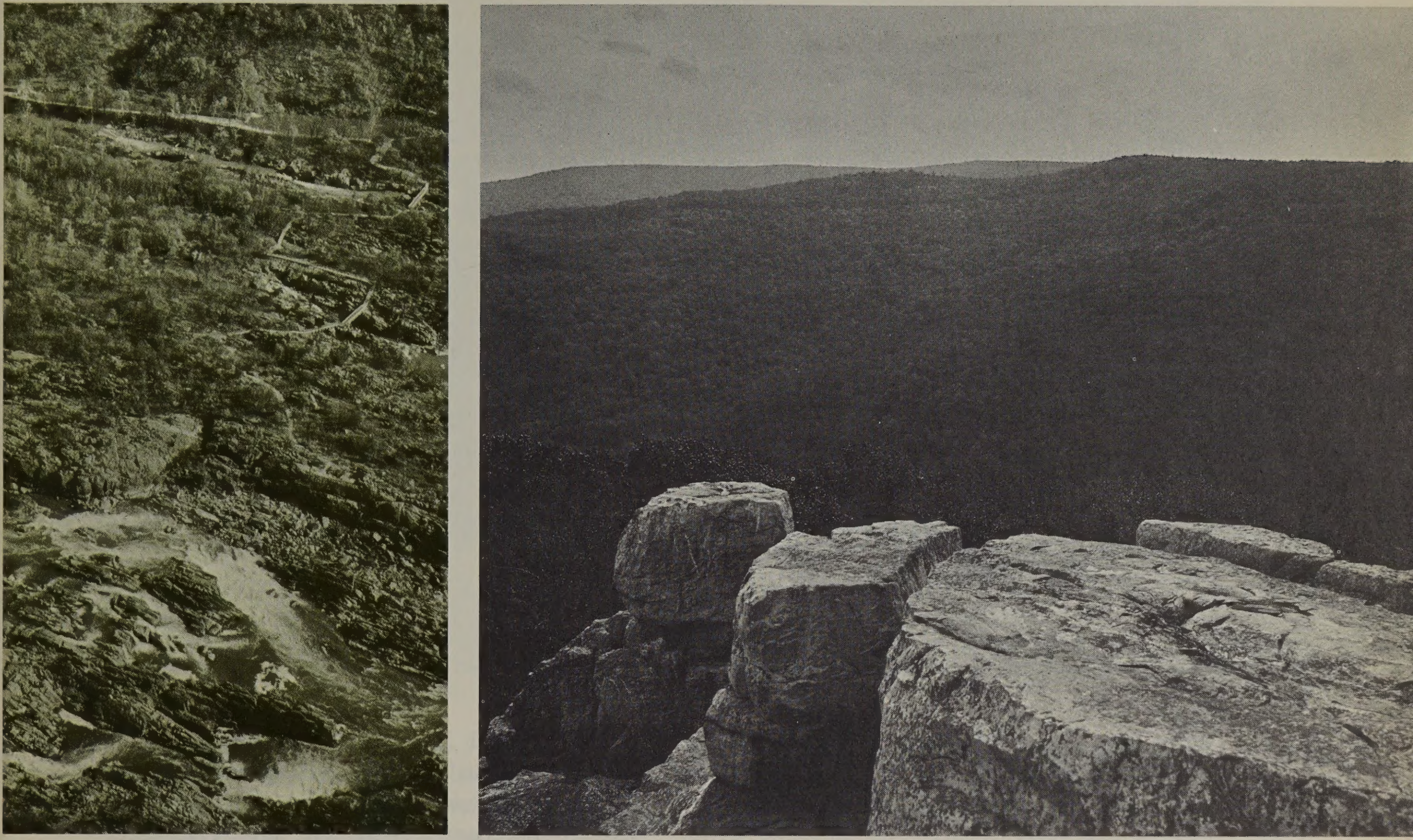
About 250 million years ago, the roots of the ancient mountain chain and the newly filled basin were deformed by a second episode of mountain building. Caught in a powerful squeeze, the rock strata were thrown into northeast-trending folds resembling the wrinkles that form when a rug is pushed across a smooth floor. Closely pressed folds can be seen in the vicinity of Hancock and Clear Spring. Toward the west they become more and more open until in western Garrett County they are broad, gentle warps.

After folding, the mountains once again were high and once again erosion began to wear them down. Linear valleys east of the mountains' crest line were filled by red muds and sands that swept in from higher areas. From time to time, lava poured into these valleys and finally, some 200 million years ago, the valleys themselves were tilted and cracked. The bevelled surface of such a valley lies beneath the fertile country near Emmitsburg, Taneytown, and Lewistown.

The tilting of these valley deposits was the last act of true mountain building; since then, erosion has been the dominant activity. Most of today's mountain ridges are supported by the upturned edges of hard strata that resist erosion better than the soft strata of the intervening valleys.

The Coastal Plain

Gently seaward-dipping beds of unconsolidated sand and clay with smaller amounts of gravel and marl underlie the Coastal Plain of Maryland. These beds, composed chiefly of material washed from the Appalachian Mountains during millions of years of erosion, extend seaward from the fall line to the edge of the continental shelf. The Coastal Plain, therefore, has both a submerged and visible part and the boundary between them is the ocean shore. Because the level of the ocean has varied throughout the past 70 million years, beds of both continental and marine rocks occur



The birth, development and erosion of the Appalachian Mountains dominate Maryland's geologic history.

in the Coastal Plain and, in places, are interstratified with one another.

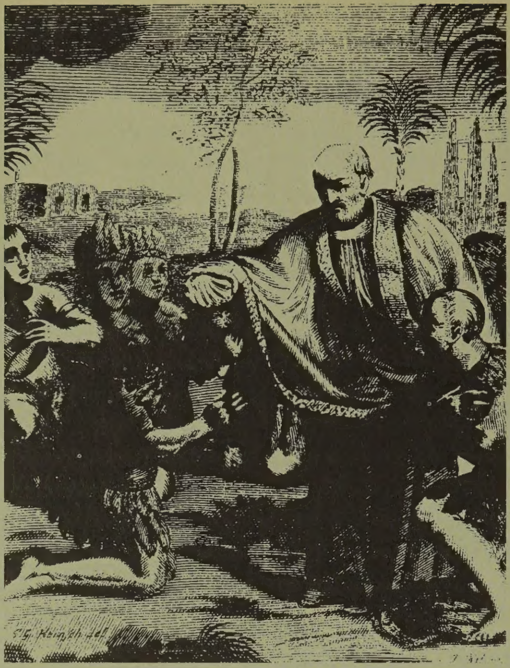
The Coastal Plain strata rest as a giant wedge on crystalline rocks which are an eastward extension of the Piedmont. The thickness of the wedge increases slowly toward the sea. For example, it is about 1,300 feet thick at Annapolis, 2,800 feet thick at Easton, 5,200 feet thick at Salisbury, and 8,000 feet thick at Ocean City. The first beds were deposited on the eroded crystalline platform about 130 million years ago. Since then deposition has been more or less continuous and is still going on today as streams wear away the land and carry the debris toward the Chesapeake Bay and on out to sea.

Climate

Maryland's climate varies with the seasons and from region to region. Winter is usually mild; however, extremely low temperatures occur in the Allegheny Plateau of the Appalachian Mountains. Though warm weather prevails in the summer, there are almost always several hot, humid periods; for relief from the summer heat, people in central Maryland travel to the mountains and to the shore.

In general, annual precipitation within Maryland is about 43 inches. Though the heaviest rainstorms occur in the summer, that is also the season for drought since summer rains are not as dependable as winter rains. Most thunder, storms are recorded in May, June, July, and August. Hurricanes may occur during the late summer and fall producing high water and, occasionally, damaging floods.

Average annual snowfall within the Old Line State varies from 9 inches in the southern part of Eastern Shore Maryland to 78 inches in the Allegheny Plateau.



(Left) Father Andrew White, who established a mission at the town of Kittamaquindi, baptizes a principal chief of the Piscataways, Chitomachen. (Right) Emmanuel Leutze's painting portrays the "Founding of Maryland."

Indian Heritage

After landing on St. Clements Island in March 1634, Lord Baltimore's colonists bought land—as well as a village of bark huts—from the Yaomaco Indians.

The Yaomacos were a band of the Piscataway or Conoy tribe, or closely related to it, which held sway on the Western Shore of the Chesapeake Bay; the Patuxent held an area in Tidewater Potomac; and the Nanticokes controlled the Eastern Shore. All were of the Algonquian family group and were related to the Delawares. These tribes engaged in fishing, hunting and agriculture and were relatively peaceful.

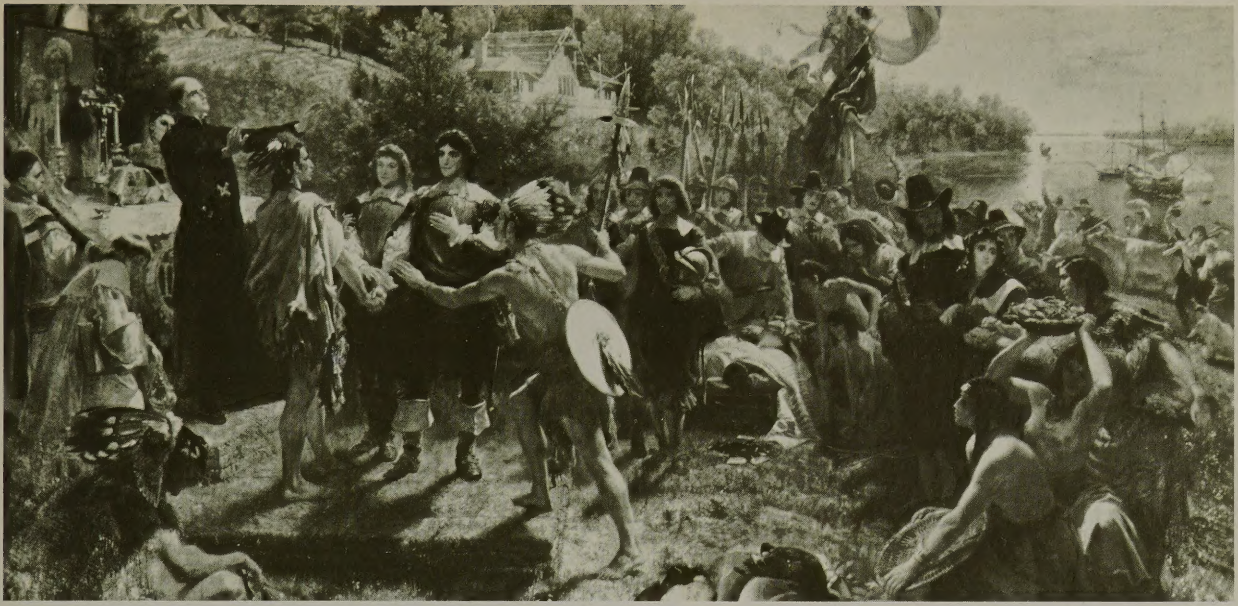
Several years after their arrival, the colonists established a Jesuit mission among the Piscataways, but is was abandoned after 2 years through fear of the warlike Susquehanna or Conestoga Indians of the Iroquois group who lived north of the Maryland border and who claimed much of Maryland as their hunting ground.

During Lord Baltimore's colonization, the Piscataway had a principal chief or Tayac known as Chitomachen, said to be ruler over a dominion that extended 130 miles east-west. He and his family were converted to Christianity. Harassed by the Susquehannas, these Indians are believed to have abandoned their country and moved up the Potomac.

In 1673 they may have held a tract of land on the Potomac near the present site of Washington, D.C. In 1675 the Susquehannas, driven from their own country by other Iroquois, again invaded the territory of the Piscataways and forced that tribe to retire further up the Potomac and into Pennsylvania.

The Nanticokes, whose name means "tidewater people," claimed to have separated from the Delawares in search of good fishing and hunting grounds. In some instances, they lived in fortified towns. Captain John Smith reported: "They conducted us to their pallizadoed towne, mantelled with the barkes of trees, with scaffolds like mounts, brested about with brests very formally."

A short time after settlement, the Maryland colony found the Nanticokes a thorn in its side. As early as 1642 they were formally de-



clared to be enemies and not until 1678 was strife quieted by treaties. Hostilities were barely averted in 1687 and in 1698; from that time on, as long as the Nanticokes remained in the region, they resided on reservations set aside for them.

In 1722 their principal village contained about 100 inhabitants and was the residence of the "empress" who ruled over all the neighboring Indians. At that time they numbered about 500. Soon afterward they began to move north, with the greater part of the tribe finally settling under Iroquois protection in what is now New York State. Some, however, remained in Maryland where they were still living in 1792.

The Patuxent met the Maryland colonists on terms of friendship which continued without serious interruption as long as the tribe existed. As early as 1639 the colonial authorities proclaimed the Patuxent as friends and declared them under the protection of the colony. In 1651 they, together with other Indians, were placed on a reservation at the head of the Wicomico River.

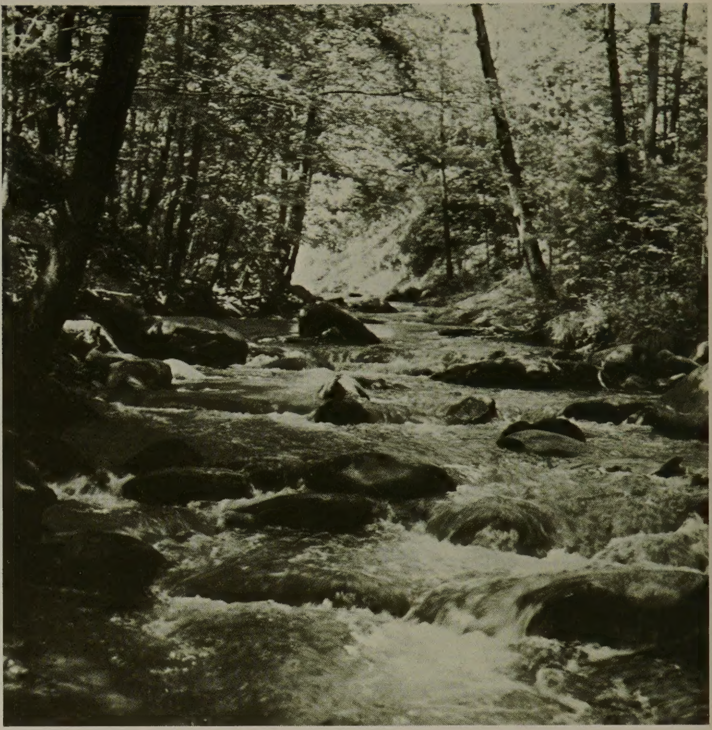
The Susquehannas at one time lived on the Susquehanna River and its branches. From 1608 when Capt. John Smith met them until they were conquered by the Iroquois confederation in 1675, they were in alliance with the Algonquian tribes of the Eastern Shore and at war with those on the Western Shore. They claimed the lands on both sides of the Chesapeake Bay, from the Choptank and Patuxent north to the territory of the Iroquois.

From about 1630 to 1644, the Susquehannas waged a relentless war southward from their homes against the Piscataways, and the related Yaomacos and the Patuxents. They created so much trouble for the Maryland colonists that Governor Calvert in 1642, by proclamation, declared them public enemies. One report says that these Indians forced the surrounding tribes to be subject and tributary to them "so that they (the surrounding tribes) dare not stir, much less go to war against them."

In 1652, after having maintained friendly relations with their European neighbors for a number of years, the Susquehannas, in the presence of a Swedish commissioner, ceded to Maryland all their territory in that colony.

Today there are several families of Nanticokes living in Caroline, Dorchester, and Wicomico Counties.

Water and Power



To me the sea is a continual miracle,
The fishes that swim—the rocks—the
motion of the waves—the ships with
men in them,
What stranger miracles are there?

Walt Whitman
Miracles

In Maryland awe of that strange miracle, the sea, has been companion to familiarity and dependence. For early settlers, the Chesapeake Bay "constituted their strength and their weakness; it afforded them their highway and their market-house; it was the main source of their wealth, and the cause of much . . . careless husbandry . . . They traded and traveled on it, fought and frolicked on it, and its inlets and estuaries were so numerous and so accommodating that nearly every planter had navigable salt water within a rifle's shot of his front door."

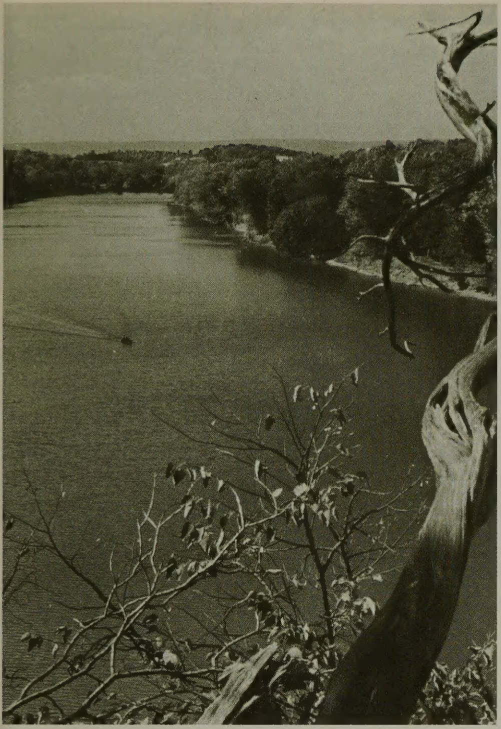
As years passed, pioneers began to seek their fortunes in the west, but the Appalachian Mountains provided an obstacle to travel. The miracle of a river-carved passage at Harpers Ferry, W. Va. (at the Maryland-Virginia-West Virginia border) made crossing the mountains easier. Rivers also determined where towns were founded and where industries were established.

Today, the large port of Baltimore, the fishing industry and the many water-based recreation areas are but three reasons why water remains a prime concern of Maryland's citizens.

The Old Line State is blessed with an abundance of water. Large surface supplies remain undeveloped and substantial ground-water sources, mainly in the southeastern section, are available to meet future local needs.

Annual precipitation in Maryland averages about 43 inches. Nature consumes about 60 percent of this by evaporation and transpiration, leaving 17 inches for replenishment of ground water and surface water. This 17 inches of rainfall over the 9,874 square miles of land area in Maryland amounts to 2.9 trillion gallons a year of available supply. In a recent year, water use, excluding that for hydropower, was about 1.5 trillion gallons.

About 90 percent of the total supply is obtained from streams with the remainder coming from ground-water sources. Streams in Maryland drain into the Atlantic Ocean, into the Chesapeake Bay, and into the Mississippi River drainage basin. The most important rivers are the Susquehanna, the Potomac, the Patuxent, the Patapsco and Gunpowder Falls. Although the Susquehanna River originates outside the State, its lower reaches are within Maryland. The river brings about 8.5 trillion gallons of water



into the State annually, nearly three times as much water as originates here.

For most of its course, the Potomac River lies within Maryland; it forms the major portion of the Old Line State's southern boundary with Virginia and West Virginia. The Potomac is the source of water for the Nation's Capital and also for part of the greater metropolitan area of Washington.

The Patuxent River lies between Baltimore and Washington, D.C., and discharges into the Chesapeake Bay. Two reservoirs on the Patuxent— Triadelphia and Rocky Gorge—supply water for most of the Maryland suburbs adjacent to the District of Columbia.

The Patapsco River and Gunpowder Falls furnish most of the water supply for the city of Baltimore, the largest user in the State. These two rivers have an estimated reliable yield of 243 million gallons per day, while the average daily intake of raw water by the city of Baltimore is over 200 million gallons per day. To meet future demands the Susquehanna River is being tapped and the new supply will add about 500 million gallons per day to the reliable yield.

Those parts of Maryland having ground water resources in excess of domestic and livestock needs lie largely in the Coastal Plain. However, ground water is widely and rather reliably available in modest quantities in the western part of the State, with larger quantities available in certain western areas. About one-half of the total pumpage of ground water is in the Coastal Plain west of the Chesapeake Bay, one-quarter in the Coastal Plain east of the Chesapeake Bay and one-quarter in the northwestern part of the State.

As more agricultural land is used for truck crops and as severe droughts occur, water for irrigation is becoming increasingly important. About 13,000 irrigated acres of orchards, tobacco and truck crops receive 6,000 acre-feet or 2,000 million gallons of supplemental water annually. About 70 percent of the water is from surface supplies, and, since sprinkler irrigation is the principal method used, the return flow is low.

Large amounts of cooling water are used by fuel-burning electric powerplants. At present about one-quarter of the water used is fresh surface-water, with the remainder coming from saline surface supplies. Because Maryland's large metropolitan areas are close to the unlimited supplies of saline water in the Chesapeake Bay and large estuaries, substantial increases in the amount of saline water used for cooling can be expected.

Water Quality

The quality of Maryland's water is generally satisfactory for most of the uses demanded of it. However, preserving this quality by controlling pollution is of great importance if the State is to meet growing water needs.

Despite the generally healthy condition of the water, there are pollution problems in certain areas. They range from industrial waste problems in the Baltimore Harbor area and acid mine drainage in the coal fields of western Maryland to municipal and industrial pollution in the tributaries, streams and estuaries of the Delmarva Peninsula.

Wastes from pleasure and commercial water craft add to the problem; organic pollution from agricultural practices and related land runoff affects the full use of some fresh water streams. Furthermore, urban development presents a source of current and even greater future water quality degradation since silt and sediment washed into streams during construction activities can play havoc with the whole ecology of an area.

Thermal pollution, caused by the discharge of heated wastewaters to streams from powerplants and other industries, is yet another growing problem in Maryland. Waste heat must be managed effectively along with other wastes if a pleasant and productive water environment is to be maintained.

The North Branch of the Potomac is one area which has faced up to its problems. It receives a variety of wastes from paper manufacturing, from the rubber and glass polishing industries and from acid drainage from coal mines. In recent years great improvement in stream conditions has been accomplished through the construction of waste treatment facilities, including a secondary treatment facility which serves a large pulp and paper company in Luke. In addition to treating a portion of the company's industrial wastes, this plant of the Upper Potomac River Basin Commission also treats municipal wastes from the communities of Luke and Westernport.

Much of the sewage from the Maryland suburbs of Washington, D.C. is conveyed to District of Columbia treatment facilities. The Washington Suburban Sanitary Commission constructs, operates and maintains the necessary sewers and pumping stations for this movement. The Commission also operates treatment plants serving other suburban areas in Maryland.

Baltimore has extensive sewage treatment facilities serving both the city and major portions of Baltimore County. A project unique in the field of water conservation and re-use is practiced here. A company purchases about 110 million gallons of treatment plant effluent per day for use in making steel. This is perhaps the largest single use of treatment plant effluent in the Nation.

Maryland has been active in implementing programs to protect and improve water quality. Primary responsibility for water pollution abatement and water quality control is assigned to the State Department of Water Resources and the State Department of Health.

Presently, all waters of the State are protected by water quality standards developed under the provisions of the Federal Water Pollution Control Act as amended in 1965. These standards include strong implementation and enforcement measures.

In addition, Maryland's Water Supply and Waste Water Planning Act of 1966 requires each county and Baltimore to develop comprehensive plans for water supply and waste water (including both sanitary sewage and industrial wastes) by January 1, 1970. These county and city plans will constitute a statewide anti-pollution plan which, in turn, will be coordinated with the objectives and activities of other States and the Federal Government.

Legislation enacted in 1967 created a board to verify the proficiency of employees superintending water and waste-water treatment plants. Under this law, all superintendents are required to be certified by June 1, 1969. Beginning in September 1967, State-financed training courses

For most of its course, the Potomac River lies within Maryland; it forms the major portion of the Old Line State's southern boundary with Virginia and West Virginia.

in sanitary technology have been offered at four regionally located community colleges to prepare students for certification as qualified operators.

Power Resources

Electric power in Maryland is produced by thermal, hydroelectric and diesel powerplants. As of January 1, 1967, the installed capacity of generating plants in the State totaled 4,276,718 kilowatts. Installed hydroelectric powerplant capacity was 11.6 percent of the total, while installed thermal generating plant capacity represented 87.8 percent. The remaining installed generating plant capacity of 0.6 percent was in diesel powerplants. As of January 1, 1967, Maryland had developed 75.2 percent of its total hydroelectric potential.

During 1966 a total of 20,378,929,000 kilowatt-hours were generated in Maryland. Hydroelectric powerplants produced 6.5 percent and the remaining 93.5 percent was produced by thermal and diesel powerplants. Coal, gas and oil are used as fuels by the thermal plants.

Authorization has been requested from the U.S. Atomic Energy Commission for construction of a 1,800-megawatt nuclear powerplant by the Baltimore Gas and Electric Company at a site on the Chesapeake Bay, Calvert County. The plant will be capable of serving a population nearly the size of Baltimore. It is estimated that the first 900-megawatt unit will begin operation in 1973 and the second unit in 1974.

Mineral Resources

Supplying building materials for an ever-expanding East Coast megalopolis has enabled Maryland to increase the annual value of her mineral output more than sixfold during the past quarter-century. Currently the State produces about $80 million worth of minerals a year.

(Left) Molten pig iron is poured into an open hearth furnace at one of the Nation's largest steel plants, Sparrows Point.

(Right) Riding on a special car, a load of "raw" bricks enters a large tunnel kiln for firing at a refractories plant.

In proportion to her relatively small area, the value of Maryland's mineral output looms large. On a basis of output per square mile of area, the Old Line State's figure of $7,400 outranks such mining States as Colorado, Arizona and Utah. Moreover, industries that process mineral raw materials from other States and from foreign countries also contribute greatly to Maryland's economy, although the dollar value from these enterprises (steel mills, copper refineries, etc.) is not included in the $80 million figure.

With mineral resources as varied as her topography, Maryland obtains coal, natural gas, and peat from her western mountain counties, soapstone and talc from the foothills, and greensand marl and peat near the Chesapeake Bay and the Atlantic Ocean. Commercial quantities of building materials—stone, sand, gravel and clay—are widely distributed throughout the State.

In the past, ores of copper, iron, chromium and gold have been mined in Maryland and small quantities of the beryllium mineral, beryl, have been produced.

Stone is Maryland's leading mineral commodity accounting for a third of the value of her annual output. Stone, sand, gravel, or clay is found in all counties and is marketed from all except Queen Annes, Somerset and Calvert. Stone is used for roads, buildings, cement, agricultural lime, railroad ballast, riprap, terrazzo, brick, flagging, and fill. Clay is used for brick and tile. Large quantities of cement produced in Carroll, Frederick, and Washington Counties are exported to neighboring States and the District of Columbia. Potassium sulfate, a fertilizer ingredient, is a byproduct of cement manufacturing at the Washington County plant.

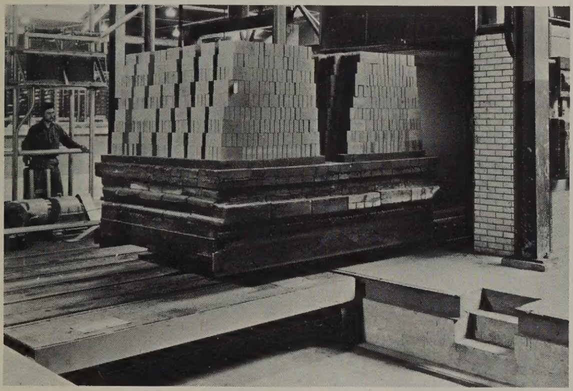
Calvert County produces greensand marl as a soil conditioner and has extensive reserves of diatomaceous earth that can be developed for the same purpose. Marl and diatomite can also be used in filtering liquids.

Maryland's other nonmetallic mineral products include: shale for lightweight aggregate; crushed oyster shell for poultry grit; and talc and soapstone for asphalt filler, roofing granules and foundry facings.

Mineral Fuels

Coal was discovered in western Maryland, near what is now Cumberland, as early as 1736 and has been mined in Garrett and Allegany Counties for more than two centuries. From a high of 5.5 million tons in 1907, annual production fell to less than half a million tons in 1954. Since then, it has risen to more than a million tons yearly and is steadily continuing to gain. It appears that increased use of coal for generating electricity is beginning to compensate for the fuel's earlier loss of the home-heating and railroad markets.

Natural gas is produced in the Mountain Lake and the Accident fields in Garrett County; preparations are underway to use some wells at Accident for natural gas storage. Peat, obtained from bogs in Kent and Garrett Counties, is marketed as a soil conditioner, rather than a fuel as it once was.



Maryland has no producing oil wells, but two refineries with a combined daily capacity of 20,000 barrels process crude petroleum from out of the State. Coke ovens at a Baltimore steel plant yield a variety of chemical byproducts.

Metals

Gold-bearing quartz veins are known to occur in the crystalline rocks of the Piedmont in western Montgomery County. Several deposits near the Great Falls of the Potomac River, discovered during the Civil War by a Union soldier, were mined sporadically until 1940, producing about 5,000 ounces of gold.

The Old Line State was once a great supplier of chromium ore. Between 1828 and 1850, her mines accounted for nearly all of the world's chromium supply; however, discovery of vast ore deposits in Russia and Turkey soon ended the boom. Though short-lived, the chromium industry in Maryland made an important contribution to mineral industries. It was one of the first mineral enterprises in America to undertake research to improve technology.

Iron and copper were mined from the Colonial period until the First World War when the State's small, high-grade deposits were exhausted. Production of iron for local use began soon after settlers became established, and by 1718 a small amount was being exported to England. Maryland furnaces produced cannon and cannon balls used in the Revolutionary War and the War of 1812. In fact, the Principio furnace in Cecil County was such an important supplier of war materiel that during the War of 1812, the British sent a force under Adm. Cockburn up Principio Creek to destroy the furnace and spike the cannon.

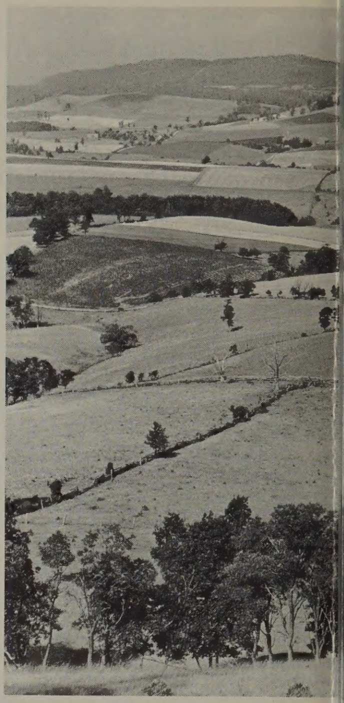
Several of the early copper mines were fairly large, but the amount of copper produced, about 17,500 tons of metal, was small by modern standards. Recently, deposits of copper minerals in Frederick County have been test-drilled and analyzed to determine their potential for future development.

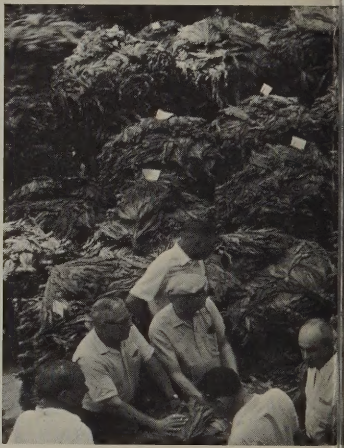
In 1954 some beryl was mined from a Maryland pegmatite deposit, and deposits of titanium minerals in the State also have been investigated.

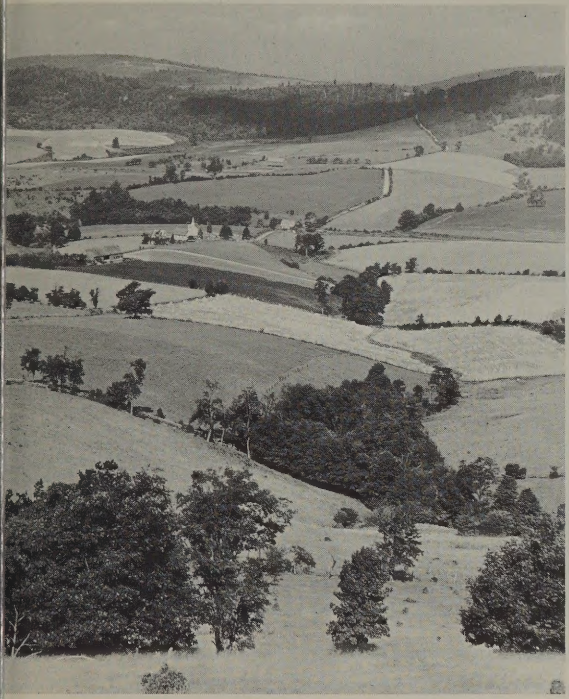
Processing Metals

Today at Hawkins Point in Anne Arundel County, a giant electrolytic copper refinery operates on imported ores; Baltimore also produces electrolytic copper. Elsewhere in the State, titanium pigments are processed from New Jersey ilmenite. There are three iron and steel plants in Maryland, the one at Sparrows Point (near Baltimore) ranking with the largest in the world. All now use imported ores as raw materials. A wide range of iron oxide pigments produced at a plant in Prince Georges County are used by Eastern paint manufacturers.

Although Maryland cannot be considered a major mineral-producing State, the volume and variety of her mineral products and the extent of her resources insure that minerals will remain a significant force in her economy for many years to come.







Land and Forests

Father White, the spiritual leader of the Calvert settlers, reported that "the soil appears particularly fertile, and strawberries, vines, sassafras, hickory nuts and walnuts we tread upon everywhere in the thickest woods."

In spite of the natural fertility of the soil, abandoned fields appeared within a relatively short time after the first settlers arrived. The cause lay with tobacco, the colony's most successful cash crop. Europeans quickly developed a fondness for the leaf and the market grew, becoming so great that an order for a given quantity of cured leaf to be delivered on demand readily passed from hand to hand in lieu of legal tender. Maryland landowners responded to demand and planted all available land in tobacco. After a few years, fields that had been repeatedly planted in the crop became exhausted and owners had to find new ground to clear.

With a few rare exceptions, forest cover extended across the entire State. "All we see is forest and water," one voyager reported and another described the forests as having the "goodliest trees for masts that may be found elsewhere in the world." Recalling a hunting trip to Garrett County made in 1834, Frederick Skinner, a Baltimore writer and publisher, wrote, "We rode five miles through a continuous forest of the finest and—could it be got to market—the most valuable timber I had ever beheld, not only for the housebuilder and ship carpenter, but for the cabinet-maker, for there were many wild cherry trees four feet in diameter, and sixty feet to the first limb."

Occupation of western portions of Maryland was well underway by the American Revolution. Many newcomers to the Colony were members of minority religious sects fleeing persecution and seeking secluded valleys in the Appalachian region where they might settle and establish their own versions of Utopia.

A population boom followed the Revolution.

New settlers often moved to outlying areas in the State and began to breed cattle and cultivate wheat, other cereals and hay. As Tidewater planters ruined the soil with tobacco, the western Maryland farmer ruined it with wheat. Fields were planted in the same crop year after year. Rotation and fertilization were little understood.

In 1803 John Colvin, editor and publisher of a newspaper in Frederick, Md. published a pamphlet by John Binns of Loudoun County, Va., advocating the use of lime and the rotation of crops to restore overworked fields to productivity. This pamphlet, highly recommended by Thomas Jefferson, did much to revolutionize agriculture of the times.

Markets for grain increased, particularly when England repealed the Corn Laws in 1846, thus greatly reducing duties on foreign wheat coming into that country. Further market growth resulted when Russian grain was not allowed through Black Sea ports during the Crimean War. At this time wheat was such a profitable crop that it was grown even on the Eastern Shore.

The boom which Maryland farmers experienced before the Civil War soon came to an end. Due to a combination of factors, including competition from Midwestern farms served by an expanding railroad system, farmers in southern Maryland and the Eastern Shore suffered greatly.

Farming Today

Most of the Coastal Plain and Piedmont consist of rich farmland—land which is relatively level and conducive to cultivation. To the west, lies the Appalachian region, an area of more rugged terrain. The Valley and Ridge section of this region, covering the western third of Washington County and all of Allegany County, is composed of steep parallel ridges and narrow valleys. Cultivated land is largely confined to the valleys with ridge tops planted in orchards. This area produces most of the State's $4 million fruit crop. To the west, Garrett County lies atop the Allegheny Plateau. Here the land is rolling; slopes are less steep than those in the Valley and Ridge section. The high elevation has a marked effect on temperature and growing seasons. Small grains (wheat, barley, rye, and oats) and livestock are produced.

In 1967 there were 20,400 farm units covering 3.3 million acres in the State.

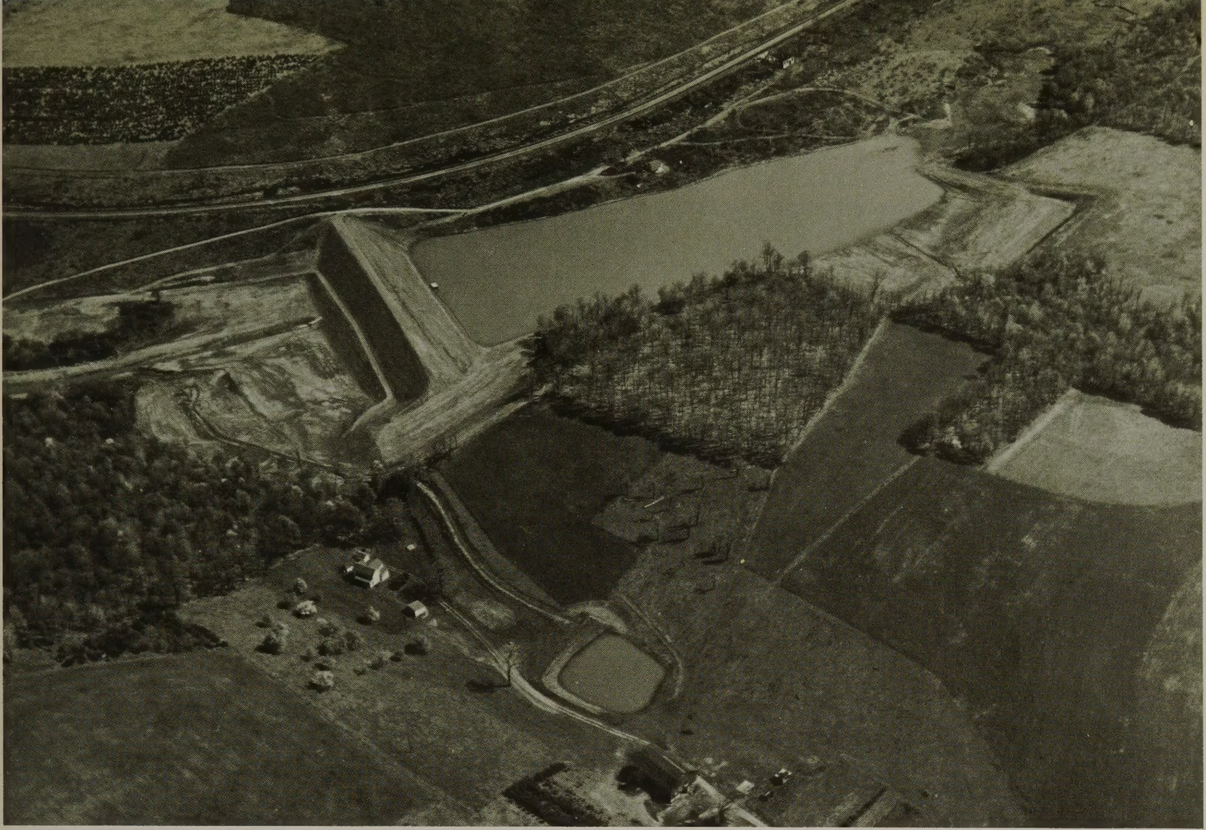
From 1962–66 Maryland's agricultural products have averaged more than $330 million per year. Dairy products, livestock and poultry accounted for more than $204 million and field crops accounted for $130 million.

The highest single revenue producer was broiler chickens averaging $81 million annually over the 5 year period. Dairy products, ranked second with almost $78 million. Major field crops were: corn averaging $32 million, tobacco averaging $21 million, vegetables and melons averaging $18 million, soybeans averaging $10 million, and small grains averaging $7 million. Maryland ranks high in strawberry harvest from the Chesapeake Bay area and in tomato yields from the Eastern Shore.

Although the total acreage of farmland is relatively small, the fertile soil, nearby markets and excellent transportation facilities make farming a profitable venture.

Forests

Early settlers found 90 percent of Maryland forested, with hardwoods, particularly oak



species, predominant. There were relatively few stands of pine before the land was cleared.

The first clearing took place along the Coastal Plain and regrowth was mainly pines, loblolly and Virginia in particular. The northern part of the Coastal Plain and the Piedmont region had oak-hickory type forests with the Piedmont also having a considerable number of poplars. In the mountainous regions of the State, oak species were common to ridges and slopes while stream valleys and other wetter areas had ash, elm, maple, and sycamore. Chestnut trees, seen quite often when settlers first came to this region, were almost destroyed by blight during this century. One hundred and fifty-seven different tree species are native to the State.

Today about 47 percent of Maryland's land area is forested. Most of the forest land is in farm woodlots or other private holdings. Public agencies own 6 percent.

The Old Line State is the meeting ground of northern and southern tree species; both the northern ranging larch and the southern based cypress are found within its borders.

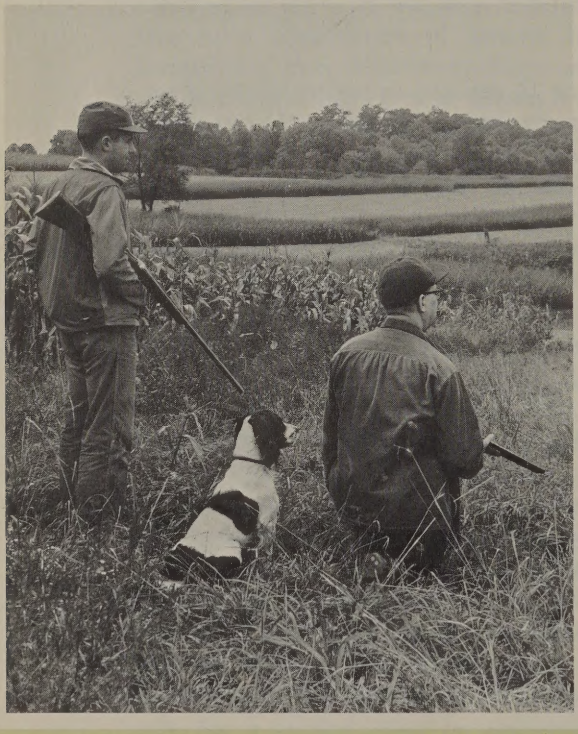
Oak-hickory stands constitute the largest acreage of a single forest type, covering 1,416,000 acres or 49 percent of the total commercial forest area in the State. Southern pines cover 600,000 acres or 21 percent, oak-gum 340,000 acres or 12 percent, oak-pine 299,000 acres or 10 percent, and other types 232,000 acres or 8 percent. Very little virgin timber is left and it is confined to small isolated or protected areas.

(Left) This barn is typical of those in the Hagerstown area. The massive limestone ends contain slits for ventilation. (Above) Scientific farming can lead to increased yields. The building of dams helps insure adequate water supplies and provides flood protection.

Hardwoods make up 80 percent of the growing stock volume. The net annual growth of growing stock is estimated at 94 million cubic feet, the annual cut is 74 million cubic feet. The net annual growth of sawtimber is 269 million board feet, the annual cut 234 board feet. In 1963 more than 138 thousand cords of pulpwood were cut from Maryland forests.

Forest products include Christmas trees, lumber, pulpwood, poles and pilings, railroad ties, mine timbers and veneer board.

In addition to supplying the raw materials for many industries, forests serve other purposes. They help stabilize water supplies, provide food and cover for game and serve as recreation areas.



Variety is the byword of Maryland. About 9,000 fishermen earn their livelihood here, while sport fishermen make an estimated 2¼ million trips to the State's tidal waters each year. Migratory waterfowl, ruffed grouse, turkeys, quail, pheasants, rabbits, squirrels and raccoons provide many hours of fine hunting.

Fish and Wildlife

The Chesapeake Bay acts as a magnet to those who dream of going down to the sea in ships. Here on the Bay, the vanishing skipjack fleet, last romantic remnant of "working sail" in an atomic age, is used to harvest oysters. On warm, clear days, the oysterman's domain is invaded by growing numbers of pleasure craft.

It is more than romance and more than recreation that make the Chesapeake one of Maryland's most valuable resources. This sprawling, tree-shaped estuary is one of the most fertile and varied marine habitats on the Atlantic Coast, providing living space for nearly 300 different species of fish and shellfish.

Commercial Fishery

An estimated 80 percent of the State's annual commercial fishery catch is taken in the Bay and its tributaries. With a total dockside value of $14.3 million for Maryland landings in a recent year, this translates into an $11.4 million share for the Chesapeake.

The State's marine resources support about 9,000 fishermen, plus an additional 4,000 workers who are employed in some 275 processing plants. Processed seafood products are estimated to have a total retail value of more than $75 million.

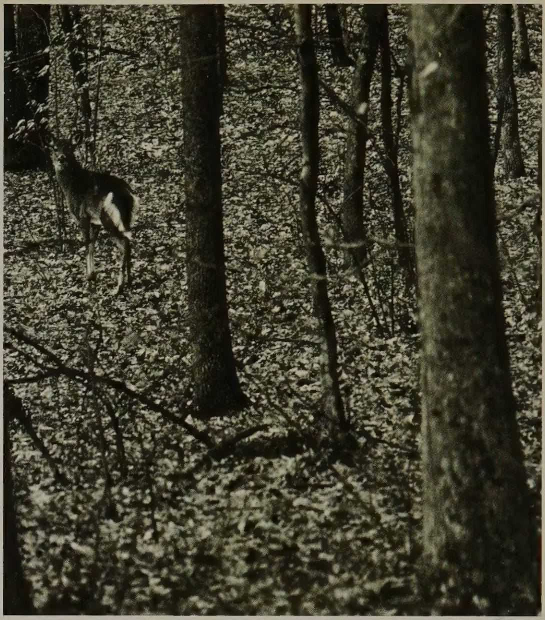
The ocean harvest includes menhaden, butterfish, white perch, striped bass, and shad, as well as oysters, clams, and crabs.

Although virtually no commercial clam fishery existed in Maryland until the mid-1950's, the introduction of a hydraulic escalator dredge made it possible to harvest the succulent mollusks from submerged beds in the Bay. With the proper tools for collection, the State's shellfishermen proceeded to make up for lost time, and by 1958 Chesapeake Bay soft-shell clam production was almost double that of Maine, the Nation's former clam champion. The infant fishery has grown steadily, and at present about 7 million pounds of meat, 60 percent of the total U.S. production, come from the Chesapeake area.

Maryland's blue crab catch accounts for almost 20 percent of the national harvest. In the spring and summer molting season, blue crabs are encountered by seafood fanciers as "soft-shell crabs," and year-round the crabmeat is used by homemakers and restaurant chefs for such specialty foods as Imperial and deviled crabs. Crabcakes have become almost synonomous with Maryland, and many of the State's famous seafood restaurants have their own, jealously-guarded, recipes.

Oyster fishing, once the Bay's most valuable fishery, has declined drastically. Though 15 million bushels were landed in 1880, the landings were 3 million bushels for the 1966–67 season—and this was described as the best in 26 years.

Since 1961 the State has carried on an extensive shell-planting and seed-transfer program. Shell is distributed in suitable areas to provide a proper environment for the growth of oysters, and small oysters, growing in crowded clumps, are "transplanted" to the new beds.



This program has succeeded in halting or slightly reversing the downward trend of the oyster fishery during the past two years; however, benefits have been partially offset by mortalities caused by the protozoan parasite, *Minchinia nelsoni*, or MSX.

MSX requires a fairly high salinity, and as several years of unusual drought have increased the salt content of northern waters, the parasite has advanced further into the Bay, reaching almost as far as the mouth of the Choptank River.

Sport Fishing

Maryland's tidal waters support an estimated 2¼ million fishing trips a year. A fishing license is not required for hook-and-line fishing in tidewater where about 40 species of table fish are caught. The top saltwater sport fish are striped bass, shad, fluke (flounder), white perch, weakfish, cod, herring, catfish, and seabass. Ocean City, the State's only port on the Atlantic Ocean, is known as the "white marlin capital of the world." Blue marlin, tuna, cod, flounder, blue fish, weakfish, and seabass are some of the species caught from charter boats operating out of Ocean City.

Thousands of persons seek the blue crab, both in its soft-shell and hard-shell state, with handlines, trotlines, and dipnet.

In addition to saltwater fishing in eastern

(Left) Whitetailed deer, found throughout the State, offer excellent hunting for both bow-and-arrow and gun hunters. (Right) Oyster and crab boats are docked in the fishing village of Nanticoke.

Maryland, mountain streams in the western part of the State support fine populations of rainbow, brook and brown trout. Bass streams, found throughout Maryland, are prime recreation areas because of their productivity and aesthetic appeal. Large impoundments support some of the heaviest fresh water fishing in the State and are intensively managed by the Maryland Department of Game and Inland Fish.

The State's fishery research and management programs are continually improving the quality of sport fishing. Four State operated fish-rearing stations produce trout and warm-water fish, including smallmouth bass, for stocking local streams. Maryland annually sells more than 150,000 fishing licenses, permits and tags from which it grosses nearly $400,000.

Wildlife

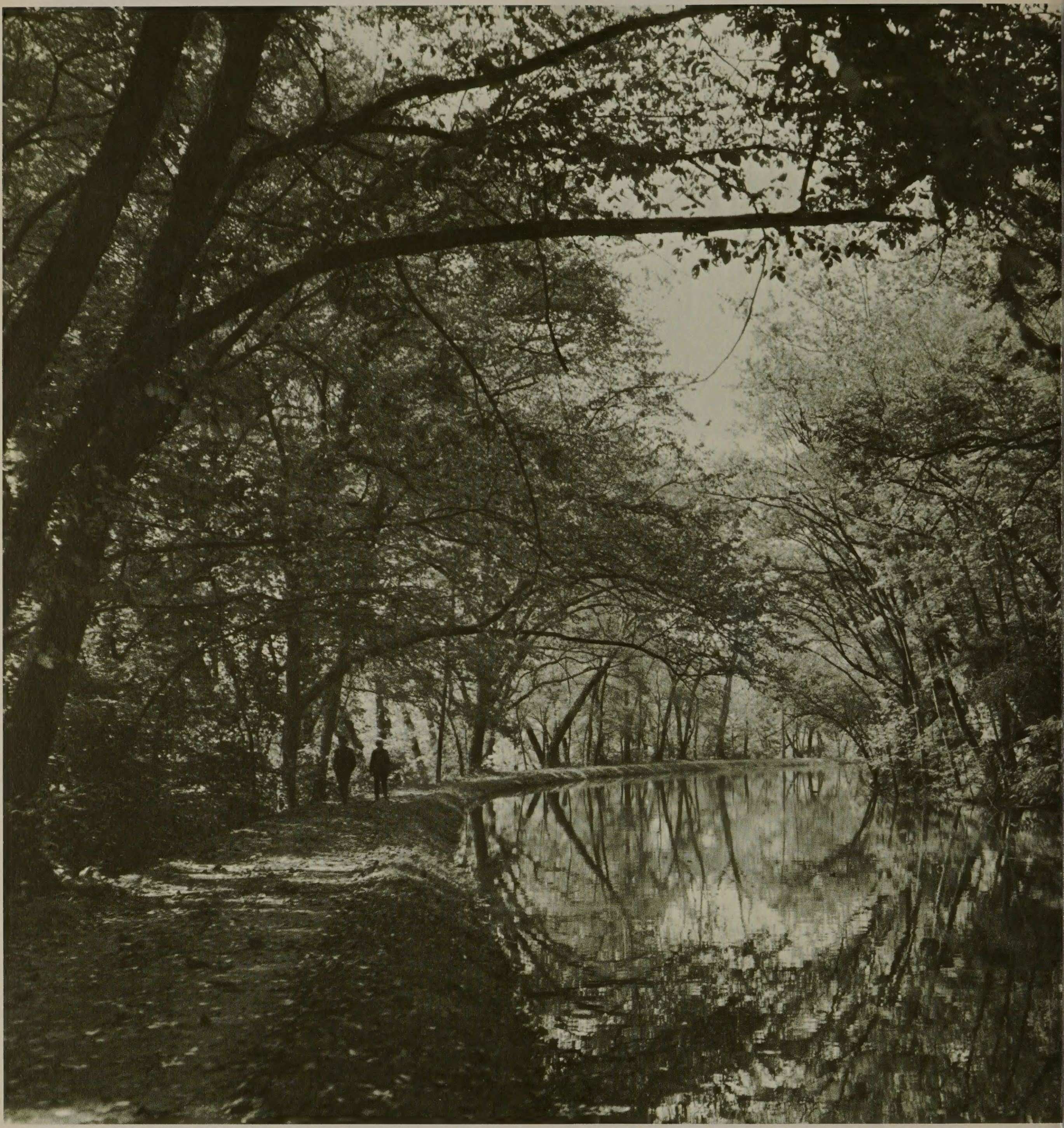
Because of the large amount of suitable habitat in the Chesapeake Bay area, migratory waterfowl—ducks, geese and swans—abound in coastal Maryland, one of the major resting and wintering areas along the Atlantic Flyway. Proximity of large wintering populations of ducks and geese to centers of human population make waterfowl hunting a prime recreational pastime; money spent by hunters is an important addition to the economy of the Eastern Shore.

Most of the hunting for geese and other waterfowl in the State takes place in a five-county area: Cecil, Kent, Queen Annes, Talbot and Dorchester Counties. The Canada goose is probably the most popular species with hunters, but canvasbacks, redheads, scaup, widgeons, pintails, black ducks, teal and mallards are also found in good numbers. Sora rails and mourning doves are other sources of good hunting for the sportsman.

Whitetailed deer, plentiful throughout Maryland, offer excellent hunting for both bow-and-arrow and gun hunters. The State estimates its deer population at 40,000 animals with more than 6,000 deer taken annually. Ruffed grouse, turkeys, quail, pheasants, rabbits, squirrels and raccoons provide many hours of fine hunting. More than 270,000 people pay nearly $1,000,000 in license fees for the privilege of hunting Maryland game animals.

During the trapping season, muskrats, found throughout the State, add substantially to income in many rural areas.

Early in its fish and game management program, Maryland recognized that publicly-owned land had to be acquired to provide hunting opportunities for a rapidly growing human population. The State has set aside 14 wildlife management areas for refuges and 27 areas managed specifically for public hunting. These areas are a great source of enjoyment for the many people who do not have access to private lands.



Walking along the towpath of the Chesapeake and Ohio Canal offers an escape from the hustle-and-bustle of everyday living.

Recreation and Tourism

Maryland is a study in contrasts. Though small, it has both a coastline and mountain range; though forward-looking, it retains memories of a rich past. Visitors come to see the renowned Chesapeake Bay and to enjoy the ocean. But rivers, such as the Potomac, Susquehanna, Gunpowder, Patapsco, Severn, South and Patuxent also offer a wealth of adventure.

If you have ridden horseback on the 35 miles of State or county trails; hiked the Appalachian Trail; explored the many coves and inlets of the Chesapeake Bay; felt the power of the Atlantic Ocean; roamed the quiet battlefields; delighted in the quaint towns where new ways of life mingle with old: you have seen only a part of what Maryland has to offer.

National Park System

The units of the National Park System located in Maryland are rich in scenic, historic and recreational interest.

The largest of these is *Assateague Island National Seashore,* which lies partially in Maryland and partially in Virginia.

All of Assateague Island and adjacent small islands, as well as the water within several hundred yards of Assateague, are included in the national seashore. Assateague State Park lies at the entrance to the 22-mile-long northern or Maryland section and Chincoteague National Wildlife Refuge, administered by the Department of the Interior's Bureau of Sport Fisheries and Wildlife, occupies most of the 13-mile-long Virginia section. Between these two sections is an area administered by the National Park Service.

The alignment and topography of Assateague's seaward side are constantly changing; the island, born of the sea and the wind, is ever sensitive to the siege of the elements. The dunes—built up by grains of sand carried and deposited by ocean currents, cast up by the surf and blown above high-tide mark by the winds—form a barrier protecting the low-lying mass of the island from violent storms.

Beyond the dunes, pines and shrubs have taken a firm hold in the sand base creating a substantial plant cover. Here deer, fox, raccoons and birds usually associated with mainland forests and meadows dwell. In the bayside waters, oysters, clams and crabs are a source of food and income for inhabitants of the nearby mainland. These waters are important, too, as a nursery for fish, both sport and commercial.

Assateague Island's magnificent beach is approximately 35 miles long and draws tens of thousands of visitors annually. The gently sloping bottom, fine surf, lack of strong undertow, moderate water temperature and easy access make it a mecca for vacationers.

Assateague is widely-known for its wild ponies. No one knows where the forebears of these appealing little horses came from, though it is legendary that they were survivors of a wreck of a Spanish galleon. For some years the Virginia herd has been managed by the Chincoteague Fire Department which holds an annual roundup or "pony penning" during the last week of July.

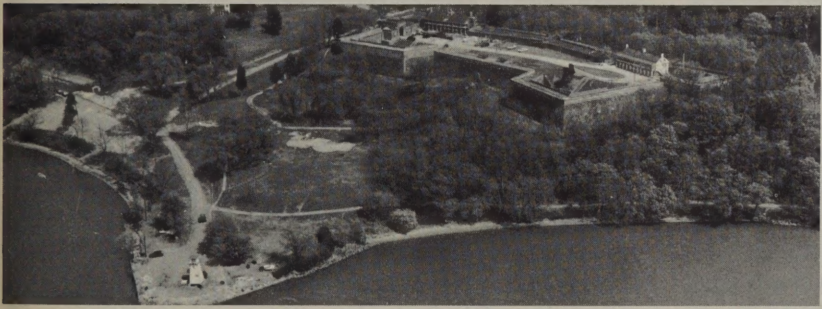
Public-use development at Assateague Island National Seashore lies largely in the future. A land-acquisition program involving several thousand owners of property on the island is underway. Within a few years the program will be completed and there will be facilities to take care of several million visitors annually.

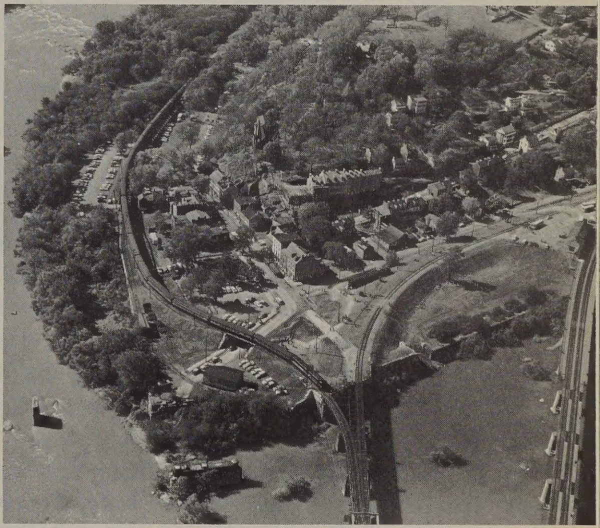
At present there is no road on the island connecting the Maryland and Virginia sections, although there is a bridge near each end of the island. A protected beach, campground and snack bar are available at Assateague State Park. Seashore headquarters on the mainland and a limited day-use area immediately south of the State park, offering seasonal lifeguard protection and sanitary facilities, are managed by the National Park Service. Facilities available at the southern end of the island include a protected beach, bathhouse and snack bar. The Maryland section of the national seashore is reached via U.S. 50 and Md. 611, or via U.S. 113, Md. 376 and Md. 611. The Virginia section is reached via U.S. 13 and Va. 175, or Va. 679 and Va. 175.

Other units of the National Park System located in Maryland include:

Fort McHenry National Monument and Historic Shrine. Fort McHenry is located a few miles from the center of the city of Baltimore. The repulse of a British naval attack on Fort Mc-

(Top row) Assateague Island National Seashore has a variety of faces. For some it is a campground; for others, a fishing resort. Some come to see the wild ponies, and some to paint watercolors. (Bottom left) The guns of Fort McHenry are poised for action. (Below) Fort Washington was built to defend Washington, D.C. (Bottom right) Harpers Ferry is the gateway to a river-carved passage through the mountains.





Henry in 1814 prevented the capture of Baltimore and inspired Francis Scott Key to write "The Star-Spangled Banner," our National Anthem. Today, by Presidential proclamation, the Stars and Stripes flies over the fort day and night.

The fort is readily accessible over East Fort Avenue which intersects with Md. 2.

Harpers Ferry National Historical Park, Maryland-West Virginia. This scenic area at the confluence of the Shenandoah and Potomac Rivers was the site of events of historic importance from the early days of the Republic to the Civil War.

As the gateway to a river-carved passage through the mountains, Harpers Ferry, W. Va., witnessed the early evolution of America's transportation system; as an area with valuable resources and power from rushing waters, Harpers Ferry contributed to the industrial growth of this country.

President Washington selected the area as the site for a Federal arsenal and armory because of its proximity to water power, sources of iron and charcoal and its ideal location for shipping completed arms to the Nation's Capital via the Potomac River. In this armory history was made in the perfection of interchangeable parts for firearms.

In 1859 the words Harpers Ferry were on the lips of the Nation. John Brown's Raid had aroused emotions in both the North and South which made a peaceful compromise to the slavery problem even more difficult. Less than 2 years later the Civil War broke out.

During the war, an area including Maryland Heights, the Maryland section of the park, was occupied alternately by Confederate and Union Forces.

Capture of the town of Harpers Ferry in 1862 by Confederate Gen. Thomas J. "Stonewall" Jackson was a dramatic prelude to the Battle of Antietam; in 1864–65 Harpers Ferry served as a base of operations for Gen. Philip Sheridan's devastating campaign through the Shenandoah Valley. When peace finally came, the town lay prostrate—a burned and battered casualty of war.

A number of the historic structures at Harpers Ferry have been restored. Other points, though not restored, are of scenic and historic interest and are accessible by trail or road.

Spectacular views of Harpers Ferry are obtained from both Maryland Heights in the Maryland section of the national historical park and from Loudoun Heights in the West Virginia section.

From Baltimore, the park is reached via U.S. 40 to Frederick, then U.S. 340. From the Washington metropolitan area, take Interstate 70s to the outskirts of Frederick, then U.S. 340; or take Va. 7 to Leesburg, then Va. 9, Va. 671 and U.S. 340. After crossing Shenandoah River Bridge, make a sharp right turn to park headquarters in Harpers Ferry. The park is also served by the Baltimore and Ohio Railroad.

Antietam National Battlefield Site and National Cemetery. The Battle of Antietam, fought on September 17, 1862, greatly affected the course of the Civil War. It halted Gen. Robert E. Lee's invasion of the North, postponed indefinitely England's threatened recognition of the Confederacy and gave President Abraham Lincoln the opportunity to issue his famous Emancipation Proclamation.

About 40,000 Confederates under Gen. Lee's command were pitted against 87,000 Federals under Gen. George B. McClellan. When the smoke of battle cleared, more than 23,000 had been killed or wounded—more casualties, it is said, than on any other single day of battle during the Civil War.

The national battlefield site lies north and east of Sharpsburg, along Md. 34 and Md. 65, routes which intersect either U.S. 40A or Interstate 70. The national cemetery is on the eastern edge of Sharpsburg.

Chesapeake and Ohio Canal. District of Columbia-Maryland-Virginia. One of the least altered of the older American canals, this scenic and historic Potomac River Valley waterway is a link in the ever-improving means of transportation that have helped bind our Nation together.

Construction of the canal, which extends from Georgetown in the District of Columbia to Cumberland, Md., was begun in 1828. Navigation of the waterway began as the divisions were completed: first, from Georgetown to Seneca in 1831; then to Harpers Ferry in 1833; to near Hancock in 1839; and finally to Cumberland in 1850. Canal boats carrying coal, flour, grain and lumber traveled the canal until 1924 when loss of traffic to more modern transportation means caused its abandonment. The canal was acquired by the United States Government in 1938.

Today the canal and the remains of locks, aqueducts, dams, culverts and lockhouses serve as reminders of the days when our young republic was establishing links with the frontier. Sites where armies crossed the Potomac during the French and Indian, Revolutionary and Civil Wars may be viewed from many points. The history of communities which sprang up along the canal is fascinating. The canal runs through Harpers Ferry National Historical Park and Fort Frederick State Park and is close to Antietam National Battlefield Site.

One of the best preserved sections is at Great Falls, on the Maryland side of the Potomac

River. Here, in a setting of natural beauty, several locks can be seen as well as the Old Great Falls Tavern, built in 1830 as a rest stop for travelers. Today the tavern houses exhibits on the history of the canal and the natural features of the Great Falls area.

Canoeing, hiking, fishing, biking, picknicking and mule-drawn barge trips are popular along the canal. Camping is prohibited except at designated camp areas.

The canal throughout its entire length of 184.5 miles is accessible by numerous Federal, State and county highways. Great Falls, Md. one of the more popular stretches, can be reached from Washington via MacArthur Boulevard extended or by River Road and Md. 189, which intersects River Road at Potomac, Md.

Hampton National Historic Site, near Towson. Hampton, one of the great post-Revolution mansions of America, was built during the period 1783-90. For 158 years it was the home of the Ridgely family, long prominent in Maryland. Spacious in size, symmetrical in design and conceived for gracious living, the mansion has those qualities of formal charm and elegance typical of the late Georgian style of architecture. It was designated a national historic site because it represents an important phase in American architecture.

To reach Hampton from Baltimore, follow Charles Street (Md. 139) or York Road (Md. 45) north to Towson, then take Dulany Valley Road (Md. 146) past Goucher College one-half mile to Hampton Lane and turn right.

Catoctin Mountain Park, three miles west of Thurmont on Md. 77. This attractive mountain retreat on the easternmost ridge of Maryland's Appalachian region, ranges in elevation from 700 to 1890 feet above sea level. Hiking trails lead to 1,400-foot rocky overlooks which command excellent views of the surrounding countryside.

To reach the park from Washington, follow Interstate 70s to Frederick, turn north on U.S. 15, skirting Thurmont. Turn right to Md. 77 as directed by National Park Service sign. From Baltimore, use U.S. 40, turn north at Frederick and follow route as described above. From Gettysburg follow U.S. 15 south, skirting Thurmont. Turn left to Md. 77 as directed by National Park Service sign.

Fort Washington Park. This outstanding example of an early 19th century fort stands on the site of an earlier fortification built to defend the National Capital. The original fort was completed in 1809. After its destruction during the War of 1812, work was begun on a new Fort Washington in 1814, under the direction of Pierre Charles L'Enfant. The new fort, completed about 1824, remained under military jurisdiction until its transfer in 1939 by the War Department to the Department of the Interior.

From the District of Columbia, Fort Washington is reached via Nichols Avenue and South Capitol Street, S.E., and Indian Head Road (Md. 210). Turn right 5½ miles below the District line and follow signs to the Fort.

Hampton is one of the great post-Revolution mansions.

Oxon Hill Children's Farm. This "demonstration farm" was established by the National Park Service in 1967 as a place where city children could watch operations of a typical family farm, such as plowing and harvesting, and pet farm animals. The farm is located south of the District of Columbia, on Oxon Hill Road, just west of Indian Head Highway (Md. 210).

State and Local Parks

Maryland has a long history of providing public outdoor recreation facilities for its residents and growing numbers of out-of-state visitors. Its efforts have increased in recent years with new State and county recreation areas constantly being added to the public estate to meet burgeoning demand.

The Maryland Department of Forests and Parks administers about 100 areas including parks, forests, historic sites and monuments and recreation areas, totaling some 198,000 acres. Many types of recreational environment are represented in the system.

The *Patapsco State Park*, for example, is large and well developed for recreation. Situated in a wooded area along both sides of the Patapsco River, it contains six recreation areas, a scenic overlook, floodlit dance patio, nightlighted ballfield, playgrounds, 15 miles of nature trails, camping facilities and a historic area. In contrast, the attraction at *Wye Oak State Park*, about 2 acres in area, is a magnificent example of the State tree, a 400-year-old, 96-foot-tall white oak with a branch spread of 165 feet. It is the largest white oak in the Eastern United States.

Maryland's highest natural waterfall, the 64-foot Muddy Creek Falls, can be seen at the *Swallow Falls Recreation Area* in the 7,457 acre *Swallow Falls State Forest*. Here the majestic virgin hemlock and white pine grow in a scenic mountain wilderness nearly 3,000 feet above sea level. Primitive camping and forestry demonstrations are held at the forest; campsites and picnic tables are provided at the recreation area on the Youghiogheny River.

Bay swimming at two supervised beaches, boat rental and launching facilities and the opportunity to watch massive flocks of migratory birds are among the attractions at *Sandy Point State Park* near the Chesapeake Bay Bridge. Crabbing and boating are popular at *Elk Neck State Park* at the head of Chesapeake Bay. In nearby *Elk Neck State Forest*, there is a community fishing pond and hunting trails provide good sport on more than 2,800 acres of cutover hardwoods and yellow pines. The *Pocomoke State Forest* (and its *Milburn Landing Recreation Area*) is a paradise for birdwatchers. A unique area of southern swamp in a northern setting, there probably is no Atlantic inland area that attracts as many bird species, particularly warblers, in the nesting season or as many unusual birds as winter residents. *Cunningham Falls State Park*, in the heart of the Catoctin Mountains, also supports abundant wildlife. One of Maryland's newest and largest areas developed for outdoor recreation, this beautiful park is easily accessible for residents of Baltimore and Washington, D.C. It contains a popular trout stream, as well as massive stone ruins of Catoctin Furnace, an 18th century ironworks.

All regions of Maryland are richly endowed with reminders of years past. In *St. Mary's City*, the first capital of the Colony, a replica of the old and very beautiful State House was built on the site of the original. *Annapolis*, founded in 1649 and capital of Maryland since 1694, retains many of its historic houses, public buildings and port atmosphere. In *Frederick*, where the first organized community resistance to British rule in the Colonies occurred, there is a beautiful

The out-of-doors beckons: Children play with rafts on a lake. The Chesapeake Bay Bridge is a backdrop for swimmers. Campers relax with a cup of coffee. Youngsters use their imagination to create a nautical world. Everyone feels a bit awkward the first time skiing.

Court Square and the burial site of Francis Scott Key. The *Monocacy Civil War Battlefield* is nearby; one can still see covered bridges on country roads in the Frederick area.

Among the many historic State parks and monuments are: *General Smallwood State Park* on the shores of the Potomac in Charles County where the restored home of the Revolutionary War hero and twice-governor of Maryland is open to the public; the *Washington Monument State Park*, with views of three States, historic battlefields and the Nation's first completed memorial to George Washington; *Gathland State Park*, where the only monument in the United States dedicated to Civil War correspondents is located. At *Fort Frederick State Park* in Washington County, the fort, built in 1756 during the French and Indian War, has been restored. It overlooks the historic Chesapeake and Ohio Canal.

There are about 500 county recreation areas in the State on some 17,750 acres. These are used extensively by day visitors with some 7,628,000 visitor days per year being recorded.

In all, there are 10 public beaches on State and county lands; five public marinas with slips for 123 boats; five trailer camps, more than 900 camping spaces and room for more than 2,100 individual campers in group camping sites; and about 6,000 picnic tables.

More detailed information about State recreation areas is available from the Department of Forests and Parks, State Office Building, Annapolis, Md. 21401.

Private Facilities

Though many of the historic sites and homes in Maryland are in private or quasi-public ownership, often these are open to the public. Among these are *Sotterly*, a magnificant colonial home overlooking the Patuxent River; *Linchester Mill*, near Preston, the oldest grist mill in operation in the United States; *Westminster Historical House* with its unique collection of dolls elegantly dressed in the fashions of 125 years ago; *Shriver Homestead* at Union Mills, an 18th century country house that has served as stage coach station, post office, store and farmhouse.

Among Maryland's resort communties are Ocean City on the Atlantic and Deep Creek Lake in the heart of the Allegheny Mountains. Private enterprise supplies most of the State's marinas—about 300 with slips for 20,000 boats; a large number of campgrounds—some 1,860 sites on 1,765 acres of land; shooting areas on more than 11,000 acres; many amusement parks, youth camps, swimming pools, most of the State's golf courses and the horse racing tracks for which the State is famous. More information is available from the Tourist Development Division, Maryland Department of Economic Development, State Office Building, Annapolis, Md. 21401 or from travel agents, petroleum companies, motel and hotel associations and chambers of commerce.

A Bureau of Mines scientist isolates a species of bacteria capable of extracting certain metals from their ores.

Programs of Federal Natural Resource Agencies

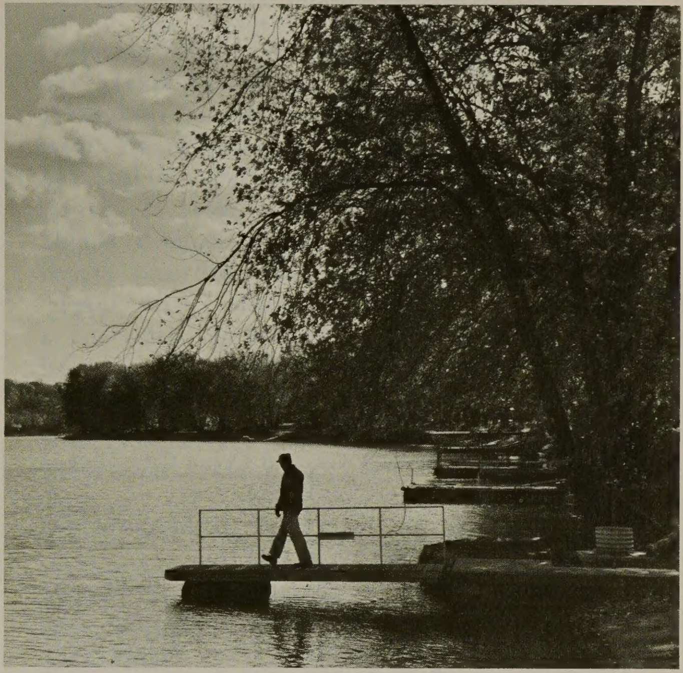
The natural resource functions of the Federal agencies represented in this booklet are extensive and detailed and are only briefly described. Additional information can be obtained by contacting the offices noted in the following programs section.

U.S. Army Corps of Engineers

U.S. Army Corps of Engineers projects in Maryland include improvements of rivers and waterways for controlling floods, hydroelectric power, navigation, water supply, water quality control, recreation and fish and wildlife conservation.

Among those navigation projects which have been completed are the Choptank River, Cambridge Harbor, Crisfield Harbor, Herring Creek,

(Above) The research vessel *Alosa* is used in studying the temperature and salinity of Bay waters. (Below) A biologist bands a red-winged blackbird as part of a study on crop damage.



Four Locks Recreation Area in the Chesapeake and Ohio Canal National Monument is maintained by the National Park Service.

Middle River and Darkhead Creek and the Wicomico River projects. Improved navigation is obtained through deepening and widening of waterways, enlarging or creating harbors, clearing, snagging and dredging of rivers and construction of locks and dams.

A project on the North Branch Potomac River at Cumberland, Md. and Ridgeley, W. Va. provides flood control for these communities. This was accomplished by improving the channel on the North Branch and Wills Creek, by building an earth levee and by the use of floodwalls, among other things. The Youghiogheny River Reservoir provides flood control and low-water supplementation for improved navigation and pollution abatement. The reservoir is located partially in Pennsylvania and partially in Maryland.

The Corps has two multiple-purpose projects completed in Maryland—one on the Anacostia River and one on the Savage River. The Anacostia project is a combined navigation and flood control project with the additional purpose of reclaiming tidal flats and creating park lands for recreational use in Maryland and in the District of Columbia. The Savage River Reservoir, in Garrett County, supplements low flows and alleviates pollution downstream. Flood control is an incidental benefit of this reservoir.

Currently, there are several navigation projects underway. A project to improve the inland waterway from the Chesapeake Bay to the Delaware River is about 60 percent complete. This project, known as the Chesapeake and Delaware Canal, accommodates oceangoing vessels, cutting the sailing distance from Baltimore to Philadelphia, New England and North Atlantic European ports. A project for Baltimore Harbor and Channels should provide a deep water approach and branch channels in Baltimore Harbor with supplemental anchorages and turning basins and a connecting channel to the Chesapeake and Delaware Canal. Navigation improvements also are currently underway on the Tred Avon River, Pocomoke River, and Ocean City Harbor and Inlet and Sinepuxent Bay.

A number of water resource projects have been authorized but not yet started.

Four regional investigations are being conducted in which the Corps participates. The Northeastern United States Water Supply Study is a joint Federal, State and local project to prepare plans to meet the long-range water needs of the northeastern United States. Part of Maryland is included in this project. The object of the North Atlantic Regional Water Resources Study is to establish a framework for future multipurpose water resource development in an area which includes the great metropolitan centers from Boston to Richmond. The Comprehensive Water and Related Resources Survey of the Appalachian Region deals with an area which includes Allegany, Garrett and Washington Counties in Maryland. The study will develop a plan for the region's water and related resources designed to stimulate growth and enhance the well-being of residents. The Ohio River Basin Review will cover areas in 11 States. The report will present an analysis of basin-wide needs for water and related land resource development and will include the probable nature, extent and timing of measures to meet present and anticipated needs.

For most of Maryland, additional information on Corps projects may be obtained from the North Atlantic Division, Corps of Engineers, 90 Church Street, New York, N.Y. 10007; however, most of Garrett County is in the Ohio River Division, Corps of Engineers, P.O. Box 1159, Cincinnati, Ohio 45201.

Bureau of Commercial Fisheries

Because the protozoan parasite, Minchinia nelsoni (MSX), is threatening Maryland's oyster industry, the Departmnt of the Interior's Bureau of Commercial Fisheries (BCF) is working with appropriate Maryland agencies to develop information on factors that encourage spread of the disease and to evolve resistant oyster strains.

Studies underway include those by the BCF's Oxford laboratory, located on the Eastern Shore. Here, four quarter-acre salt-water ponds are used in various projects. Aquaculture, or "fish farming," is primarily devoted to oysters and clams. Raft culture of oysters, also used in Japan, involves growing the shellfish on ropes hung from rafts—a method that both protects the oysters from many bottom-dwelling predators (such as drills and starfish), and utilizes the vertical dimension of the water so that less actual "bottom area" is required. In addition the laboratory is studying the life history of surf clams, including such aspects as reproduction, growth, physiology and environmental effects.

The Bureau's Shellfish Advisory Service, also located at the Oxford laboratory, provides skilled liaison for the Bureau, private research institutions, State agencies, universities and the shellfish industry. Through this service, industry problems are brought to the attention of appropriate research agencies and the latest data is channeled back to the public for practical application.

As a major commercial fishing State, Maryland has received more than half a million dollars under the Commercial Fisheries Research and Development Act of 1964. This legislation, administered by the Department of the Interior, provides Federal funds for as much as 75 percent of the cost of approved State research and development costs.

As of January 31, 1968, the State had received an additional $115,000 under the Anadromous Fish Act of 1964. Designed to encourage the conservation of fish which spawn in fresh water but spend most of their lives in salt water, this program provides Federal funds on a 50 percent matching basis and is under the joint supervision of the BCF and the Bureau of Sport Fisheries and Wildlife.

In cooperation with State agencies, the BCF maintains statistics on production and value of all commercial fisheries, imports, fishing craft, employment, volume and value of processed fishery products and production of fishmeal and oil.

For more than 30 years, the Bureau's Market News Service has provided information on receipts, landings, prices and market conditions. Maryland reporters for the service are stationed at Baltimore, Crisfield, Cambridge and Ocean City.

To promote increased consumption of fish and shellfish, a marketing office is maintained in Baltimore, where BCF personnel conduct special promotions such as fish cookery demonstrations for special meetings or television broadcasts.

On the University of Maryland campus at College Park, the Bureau operates both a technological laboratory and the National Home Economics Research Center.

Studies at the technology laboratory, in conjunction with work at a scale model plant at nearby Beltsville, are focused on development and use of fish protein concentrate (FPC). Made from whole fish, this fine, odorless powder can supply the protein needs of millions of people at nominal cost.

A type of FPC which the Bureau produced from hake has been approved by the Food and Drug Administration for human consumption, and plans are underway to erect a full-size processing plant in the Pacific Northwest.

The technological laboratory is also investigating the nutritive value of fish meal and fish oil in poultry and swine feed and is working on the development of machinery to extract meat from blue crabs.

At the home economics center, tests are conducted on fish dishes and recipes are developed for the Bureau's colorful seafood cookbooks. As part of the program to increase the use of seafood, the booklets are made available through the Government Printing Office.

A typical sample is this Maryland-style recipe:

CHESAPEAKE BAY CRABCAKES

1 pound blue crabmeat
2 tablespoons chopped onion
2 tablespoons butter or other fat, melted
1 egg, beaten
½ teaspoon powdered mustard
½ teaspoon salt
Dash pepper
Dash cayenne pepper
½ cup dry bread crumbs

Remove any shell or cartilage from crabmeat. Cook onion in butter until tender. Combine all ingredients except crumbs. Shape into 6 cakes and roll in crumbs. Place cakes in a heavy frying pan which contains about ⅛ inch of fat, hot but not smoking. Fry at moderate heat. When cakes are brown on one side, turn carefully and brown the other side. Cooking time approximately 5 to 8 minutes. Drain on absorbent paper. Serves 6.

If that one "tastes like more," the following can be ordered from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402:

Fish for Compliments—On a Budget	15¢
Time for Seafood	45¢
Fancy Catfish	25¢
Seafood Slimmers	25¢
Let's Cook Fish	60¢
Fish and Shellfish Over the Coals	40¢
Top o' the Mornin' with Fish and Shellfish	25¢

For more information about BCF activities in Maryland write the Regional Director, Bureau of Commercial Fisheries, Federal Building, 14 Elm Street, Gloucester, Mass. 01930.

Federal Water Pollution Control Administration

The Federal Water Pollution Control Administration of the Department of the Interior carries out the Federal program to assure an adequate supply of clean water. While the role of the FWPCA and other Federal agencies is a significant one, effective solutions to water pollution problems depend on close cooperation and coordination with State and local governments. In general, the FWPCA program consists of long-range planning, research and training, enforcement and technical and financial aid to States and local communities.

Since 1956 construction of municipal waste treatment facilities in Maryland has been stimulated by Federal grants. Grants in excess of $16.5 million have been made on some 150 projects representing a total investment of $118 million. Recent amendments to the Federal Water Pollution Control Act have afforded certain "bonuses" in increased Federal funding where the State provides comparable aid to its communities.

Another grant feature of the Federal Water Pollution Control Act provides an annual allocation of funds to individual State water pollution control programs. Maryland is currently receiving some $173,500 per year from FWPCA as its program grant, a portion of which must be used for training personnel for State and local water pollution control work.

Long-Range Planning

Long-range comprehensive planning to make the best use of the water resources in all of the Nation's major river basins is a primary function of FWPCA. This function was given a significant assist when the Water Quality Act of 1965 required the establishment of water quality standards or criteria for all interstate and coastal waters. Maryland has adopted such standards—enforceable goals for achievement and maintenance of suitable quality in streams and coastal waters to satisfy all desired water users.

Within Maryland there are two comprehensive water pollution control projects: The Chesapeake Bay-Susquehanna River Basins Project covers approximately 90 percent of the State, while the Ohio River Basin Project covers the remaining 10 percent. One of two field stations maintained by the Chesapeake project is in Maryland at the Annapolis Science Center.

The Chesapeake Bay serves both a growing commercial and sport fishing industry and the increasing water demands caused by municipal and industrial development. Future growth and prosperity are based on providing good water for the people in the Bay area and determining effective waste control measures that will preserve the Bay's recreation values.

The FWPCA works closely with other Federal agencies, such as the U.S. Army Corps of Engineers, in water resource planning.

Grants are awarded by the FWPCA to help pay administrative costs of these river basin planning agencies.

Research and Training

The Federal program for research and training in water pollution control takes two approaches—in-house and external research. Internal research is carried on at FWPCA's field laboratories, of which there are now six. Six others are in various stages of design and planning; one will be located in Maryland to serve the mid-Atlantic States. All are being established at or near colleges and universities to facilitate training new manpower, as well as coordination of water pollution research programs. Specialized short courses are offered at the FWPCA laboratories or are arranged by laboratory personnel at points that can best serve those wishing to attend. Engineers, chemists, biologists and others working or planning to work in the field of water pollution control are attending these courses in increasing number.

The FWPCA fosters and supports external research, development and training through grants and contracts to cities, colleges, industries and individuals. For example, a $1,650,000 demonstration grant has been awarded to the Washington Suburban Sanitary Commission for design and construction of an advanced waste treatment facility for the Piscataway River Basin of Prince Georges County. It will demonstrate methods for removal of phosphorus, biochemical oxygen demanding wastes, suspended solids and refractory organics from a waste stream in greater amounts than conventional waste treatment now achieves. The ultimate goal of advanced waste treatment is to completely reclaim wastewater for immediate re-use, even as drinking water.

At Johns Hopkins University and the University of Maryland, FWPCA is supporting ongoing programs of basic and applied research in pollution control, as well as expanded training courses in this area of endeavor. Federal grants for the latter include student stipends to encourage careers in water pollution research. Fellowships have also been awarded to individuals for the support of specialized research and training at these institutions. FWPCA's support of research and training through these channels currently totals about $150,000 a year in Maryland.

Other Duties

Enforcement sometimes becomes necessary when cities or industries lag in attacking their pollution problems. Maryland has been involved in two Federal enforcement conferences. The first concerned the Potomac River in the Washington metropolitan area. Maryland representatives met with officials from Virginia and the District of Columbia to set up time schedules for construction of pollution abatement facilities. The other enforcement action concerned acid drainage from mines into the Monongahela River. Maryland, West Virginia and Pennsylvania took part in this conference.

The FWPCA, at the request of Maryland water pollution control agencies, has made available technical assistance ranging from simple responses to letters or requests for information to detailed studies or investigations requiring several years work.

Equally important in helping the State is FWPCA's pollution surveillance program which collects, evaluates, and disseminates water quality data. Such data are not only important in determining compliance with the State's water quality standards, but also in the development of pollution abatement plans.

National water pollution surveillance stations are located at Great Falls and Hagerstown in the Maryland portion of the Potomac River and at Conowingo Dam in the Maryland portion of the Susquehanna. In addition, there are four automatic water quality monitoring stations and another national water pollution surveillance station located on the Potomac in the Washington metropolitan area.

The FWPCA provides guidance and assistance to other Government agencies for the control of pollution from Federal installations and activities in Maryland. Activities range from surveys and inspections of waste disposal practices to coordination and review of water pollution control planning for waste treatment facilities where needed. The overall program also considers the control of pollution from ships and other watercraft, both Federal and non-Federal, that traverse Maryland waters.

Additional information may be obtained from the Middle Atlantic Regional Office, Federal Water Pollution Control Administration, U.S. Department of the Interior, 918 Emmet Street, Charlottesville, Va. 22901.

Forest Service

Maryland is one of 20 States included in the Forest Service's Eastern Region. Although there is no national forest land within the State, the U.S. Department of Agriculture's Forest Service participates in cooperative forestry and forest research projects here. A number of these research studies are conducted at the USDA Research Center in Beltsville. Other research that benefits Maryland is undertaken by the Forest Service's Northeastern Forest Experiment Station.

A recent in-depth survey of Maryland's timber resources has been conducted by the Northeastern Station in cooperation with the Maryland Department of Forests and Parks. The findings have been published in an illustrated, 93-page report entitled "The Timber Resources of Maryland," which may be obtained from the Upper Darby, Pa., office.

Assistance to Foresters

To assist in the management and protection of State, industrial, and privately held forest lands in the northeastern part of the Nation, the Forest Service maintains a forestry office at Upper Darby, Pa. The Area Director in charge of this office works in close cooperation with State conservation agencies, including the Maryland Department of Forests and Parks.

Each year the Maryland Department of Forests and Parks—with the help of the Forest Service—assists some 2,000 Maryland landowners, loggers, and processors of small forest products and aids in the preparation of between seven and eight hundred forest management plans involving an average of 27,000 acres of Maryland woodland.

In addition, watershed specialists from the Northeastern Area of the Forest Service, acting under the Flood Control Act of 1944, have undertaken grading, planting and other erosion control programs along the Potomac Basin and rehabilitation of strip-mine areas in Maryland.

Forest Service Research

The Forest Service has two laboratories at the Agricultural Research Center at Beltsville and maintains a 1,200-acre experimental forest on the east side of the center. The experimental woodland serves as a field laboratory for study of forest tree diseases. In the center, one laboratory is devoted to studies of forest physiology, including basic research on mycorrhizal fungi and on the initiation and development of flowering and vegetative tissue in trees. In the other laboratory scientists investigate diseases of forest trees and wood products. This laboratory has one of the world's largest collections of living cultures of fungi responsible for disease and decay of forests and deterioration of wood products.

The Forest Service Electronics Center is also located at Beltsville. Here specialized equipment for forestry work is developed, such as the infrared fire detection and mapping system which has proved so useful in the pinpointing of forest fires; fire weather telemetry stations; fire danger analog computers and other technical devices. The electronics center is also responsible for procuring, testing and certifying communications equipment for national forests.

The address of the Northeastern Forest Experiment Station and the Area Director, Northeastern Area, U.S. Forest Service is 6816 Market Street, Upper Darby, Pa. 19082; the Forest Physiology Laboratory, Forest Disease Laboratory and Forest Service Electronics Center are located at the USDA Research Center, Beltsville, Md. 20705.

Geological Survey

The Geological Survey of the Department of the Interior has three main areas of responsibility in Maryland. It conducts water resources investigations, publishes topographic maps and conducts a variety of research programs related to the geology of the State.

Water Resources Investigations

The Geological Survey determines and describes the availability and quality of the water resources of Maryland, on the surface and underground, under conditions of present or potential development and use by man. Investigations are planned specifically to obtain facts needed to solve water problems relating to distribution, supply, quality, and floods.

Basic facts on surface and ground water are collected by the Geological Survey through its Hydrologic Data Network. In Maryland the Survey maintains 87 stream-gaging stations and determines ground water levels regularly at 128 wells located strategically throughout the State. The quality of surface water is observed at 20 sampling sites. The raw data from these networks provides information on variations from day to day which cannot be obtained by other means.

Areal and interpretative studies which strive to improve the development and management of water resources make use of the basic data collected from these networks. Representative activities include study of ground water potential in the Salisbury area, water resources of southern Maryland, floods from small drainage areas—with emphasis on areas of less than 10 square miles—the chemical character of water in Maryland streams, continuing observations of the effects of urbanization on the hydrology of the Northwest Branch Anacostia River and

Rock Creek Basins, study of the ground water potential of the Delmarva peninsula, which includes all of the Eastern Shore counties of Maryland, a continuing current estimate of the fresh water runoff from Maryland into the Chesapeake Bay and studies on tidal flow and water quality in the Potomac River.

Most water resource investigations by the Geological Survey are carried out in cooperation with State agencies and with other Federal agencies.

Topographic Mapping

The Survey began its topographic mapping program in Maryland in 1884 when a field party under the direction of William T. Griswold started plane table surveys near Cumberland. The first quadrangle maps at the scale of 1:62,500 were published in 1890.

Maryland is completely covered by published maps at scales of 1:24,000 (1 inch represents 2,000 feet.), and 1:250,000 (1 inch represents about 4 miles). A topographic and a shaded-relief map of the State at the scale of 1:500,000 (1 inch represents about 8 miles) are also available.

The Geological Survey is continuing a program to update existing maps.

Research Programs

Many of the known ore deposits of the Appalachian region (which includes part of Maryland) are currently being studied by Survey scientists. Field studies, supplemented by various kinds of laboratory analyses, are designed to determine the geologic features that control ore deposition; this information can be used as a guide in the search for new deposits.

Tidal flows, time of travel and dispersion patterns in the estuarial reaches of the Potomac, along with changing water quality patterns are being investigated.

Regional geologic analyses of Harford and Cecil Counties are underway, in cooperation with the Maryland Geological Survey.

The engineering aspects of the geology of the Washington, D.C. metropolitan area, part of which lies in southern Maryland, are being studied to aid in the planning of urban expansion and of underground communications systems.

The geologic history of the Atlantic Coastal Plain and the Continental Shelf areas which include the eastern part of Maryland, is being compiled from studies of stratigraphy and the remains of ancient sea life. These studies will be important for both water resources and economic development of the area.

Additional information on programs of the Geological Survey may be obtained from Director, Geological Survey, Department of the Interior, Washington, D.C. 20242.

Bureau of Mines

In Maryland, as elsewhere throughout the Nation, the Department of the Interior's Bureau of Mines cooperates with other Federal and State agencies to help the State make the most of its mineral resources. Not limiting its programs to the development of mineral resources and to their wise and efficient use, the Bureau also works to advance health and safety in the mining and mineral-processing industries and in recent years has emphasized scientific and engineering studies to improve environmental conditions connected with the extraction, processing and use of minerals and fuels.

Minerals Research

The Bureau of Mines maintains a major field installation on the University of Maryland campus at College Park—the College Park Research Center—which houses extensive metallurgy research laboratories. Here experiments are conducted in all phases of metallurgy: primary recovery of metals from ores, secondary recovery from scrap and techniques for refining metals. Off-campus, at Edmonston, efforts are devoted to recovering and refining metals found in incinerator residues. These residues contain millions of tons of iron and other valuable metals, which now are lost when the residues are buried at municipal dumps.

The Industrial Water Laboratory is a little-known but important activity at the College Park Center. There, scientists investigate problems associated with the use of water in fuel-burning industrial powerplants, like steam boilers used in generating electricity. This work is a natural offshoot of the Bureau's concern with the efficient use of mineral fuel resources; the laboratory has made many valuable contributions toward combating problems such as boiler and condenser corrosion. Federal installations applying the knowledge developed in this laboratory are estimated to save from $3 to $6 million a year.

Research at other Bureau facilities also helps the mineral industry of Maryland. At nearby Morgantown, W. Va., coal research is aimed at broadening the market for bituminous coals of Maryland and other eastern States by finding new uses for coal and by making it more valuable as a fuel and as a source of chemicals. Research affecting Maryland's mineral-related industries includes methods of using coal gases to operate turbines that generate electricity, techniques for increasing the efficiency of blast furnaces and devices for removing sulfur compounds from stack gases. The latter process, in addition to reducing air pollution from burning coal, promises to supply a salable sulfur product that will help offset the cost of the pollution control equipment.

Mineral Resource Development

To obtain the information needed for planning and conducting its own programs, the Bureau collects, interprets and publishes definitive statistics on production and employment in Maryland's mineral industries. This information, which is based on data voluntarily supplied by mineral-producing firms throughout the State, is utilized by these same firms and by many others as a valuable guide for marketing, investment and similar activities.

Health and Safety

Bureau mine inspectors carefully observe working conditions and practices in Maryland's mines and quarries. They develop inspection procedures and safety standards and investigate fatal accidents. Findings and recommendations are reported to the industry operator and to concerned State and Federal agencies.

Equally important as a means of promoting mine safety are classes conducted by Bureau inspectors in which each year hundreds of workers from many types of mineral operations receive training in accident-prevention, first-aid and mine rescue procedures.

Additional information about Bureau of Mine's projects in Maryland may be obtained from Area I Mineral Resource Office, Bureau of Mines, 4800 Forbes Avenue, Pittsburgh, Pa. 15213.

National Park Service

As part of a continuing long-range conservation, development and improvement program for the Department of the Interior's National Park System, various projects are proposed for the units located in Maryland.

At Assateague Island National Seashore, development has started on those portions of the national seashore which have been acquired thus far. A visitor center and park headquarters building was opened in the summer of 1967 on the mainland side of the bridge leading to the Maryland portion of the national seashore. Additional sites will be developed for public use as funds become available and as land acquisition progresses.

At Fort McHenry National Monument and Historic Shrine, development plans call for expansion of the visitor center and utility building, rehabilitation of the seawall, widening of the entrance gates, modification of the entrance road and parking system, rehabilitation of brick walks in the vicinity of the fort, and installation of a central heating and dehumidifying system in the fort.

Plans for the Chesapeake and Ohio Canal call for the surfacing of portions of the towpath alongside the Canal, restoration of the Seneca Aqueduct, restoration of blockhouses, installation of a small boat marina in the vicinity of Seneca, and construction of parking, picnicking and other facilities along the canal route.

Much valuable work, including trail, picnic areas and other developments, has been performed by enrollees at the Job Corps Centers operated by the National Park Service at Catoctin Mountain Park and at Harpers Ferry. The enrollees will continue to play a significant role in future developments in these areas.

Improvement of interpretive facilities and services in the parks is of major importance. Therefore an interpretive center is to be built at Harpers Ferry which will house shops, studios and office space for the design and production of museum exhibits, graphics, motion pictures and publications to be used throughout the National Park System. In this three-story brick structure overlooking the Shenandoah River, there will be space for a staff of about 80 artists, writers, editors, designers, film makers and other craftsmen. It will take about a year to complete the structure.

Legislation enacted by Congress in 1961 authorized the establishment of Piscataway Park at the confluence of the Potomac and Piscataway Creek. This land, overlooking Fort Washington and Mount Vernon, is in the process of being acquired.

Since Maryland surrounds the District of Columbia on three sides, it is just as important to the Federal Government as to citizens of Maryland that the main arteries into Washington be good highways. Therefore, the National Park Service administers or helps administer three highways. The Baltimore-Washington Parkway is administered jointly by the National Park Service and the State of Maryland. Greenbelt Park, located within a portion of the parkway 5 miles northeast of Washington, is administered by the Park Service. Suitland Parkway provides quick access from Washington to government installations in Suitland, Md. and to Andrews Air Force Base. Though only a few miles of the Maryland section of the George Washington Memorial Parkway have been completed, eventually it will extend from Great Falls to Fort Washington Park, providing a scenic road which parallels the Potomac and serves travelers going to and from Washington.

Further information on Assateague Island National Seashore can be obtained by writing to the Superintendent, Route 2, Box 111, Berlin, Md. 21811. For additional information on Harpers Ferry National Historical Park write to the Superintendent, Box 117, Harpers Ferry, W. Va. 25425. Additional information on the other park areas in Maryland can be obtained from the Regional Director, National Capital Regional Office, National Park Service, 1100 Ohio Drive, S.W., Washington, D.C. 20242.

Bureau of Outdoor Recreation

The Department of the Interior's Bureau of Outdoor Recreation administers a program of grants-in-aid to States and their political subdivisions for outdoor recreation planning, land acquisition and development. This program which requires States to match available Federal dollars, was authorized by the Land and Water Conservation Fund Act of 1965.

Moneys in the fund derive from "pay-as-you-go" user fees and entrance charges at designated Federal recreation areas, from sale of surplus Federal real property and from the Federal motorboat fuels tax. The Federal recreation fee program, popularly known as "Operation Golden Eagle," promotes sale of $7 Golden Eagle Passports—year-long carload entrance permits to designated U.S. recreation fee areas—and disseminates information about the fund. Proceeds from the sale of Golden Eagle Passports are deposited in the fund.

The Bureau of Outdoor Recreation does not manage any lands or recreation facilities. Its chief duties are to cooperate with the States, promote coordination of Federal programs, administer grants-in-aid and develop a long-range continuing nationwide outdoor recreation plan based on State, Federal, regional, local and private plans.

The bureau provides technical assistance to Maryland in preparation of the statewide recreation plan which the State must have to qualify for matching fund grants. This plan provides guidelines for future development by individuals, private organizations, cities, counties and units of State government.

Additional information can be obtained from Regional Director, Bureau of Outdoor

Recreation, Northeast Region, 128 North Broad Street, Philadelphia, Pa. 19102.

Soil Conservation Service

The Soil Conservation Service of the U.S. Department of Agriculture helps Maryland landowners and communities in resource conservation work through 24 soil conservation districts and through small watershed projects sponsored by local organizations.

Each conservation district is legally responsible for conservation work within a county and has working agreements with many Federal and State agencies and private concerns.

Professional SCS conservationists assigned to each district give technical aid in planning and installing needed conservation measures, both on farms and on land being developed for urban uses. For example, realizing that large-scale, lengthy land disturbances often result from suburban construction, SCS helps make sure care is taken to prevent erosion and sediment damage to land, homes and streams.

As part of its assistance SCS, aided by the Maryland Agricultural Experiment Station makes soil surveys. These surveys show the kinds of soil present and their boundaries, describe their physical features and predict how they will respond under various uses. Landowners find the surveys valuable in planning for the use of each part of their property, whether it is a farm, subdivision or commercial site. Soil surveys also are used by engineers, planning and zoning officials, land appraisers and others.

Small watershed projects under Public Law 566 are sponsored by local groups for flood prevention, farm-water management, municipal and industrial water supply, fish, wildlife and recreation development. The aim is to combine proper land use and treatment with floodwater-retarding dams to protect the watershed area and to bring new economic opportunity.

Further information about programs of the Soil Conservation Service in Maryland can be obtained from the Soil Conservation Service State Office, Room 522, Hartwick Building, College Park, Md. 20704.

Bureau of Sport Fisheries and Wildlife

The Bureau of Sport Fisheries and Wildlife of the Department of the Interior administers four wildlife refuges in Maryland.

Blackwater National Wildlife Refuge, on the Eastern Shore about 10 miles south of Cambridge, is a versatile operation. While it is an important resting, feeding and wintering area for migratory birds and a vital link in the chain of refuges extending along the eastern coast from Canada to Florida, it also serves as a significant nesting area for black ducks, blue-wing teal, mallards, wood ducks and Canada geese. Peak concentrations of 95,000 Canada geese and 125,000 ducks are recorded here during the fall migration.

The refuge's 11,216 acres of scenic timbered swamps, tidewater marshes, farmlands and fresh-water ponds provide excellent waterfowl habitat. Corn, millet, wheat, buckwheat, soybeans, barley and ladino clover grown on more than 900 acres of farmland adjacent to the water benefit many species of upland game birds and mammals, as well as waterfowl.

In open marsh areas, waterfowl habitat is improved by muskrat management. Muskrats make openings in the otherwise dense vegetation that are beneficial to ducks and geese. Annual trapping keeps the muskrat population at a suitable level on the refuge.

Foxes, raccoons, opossums and skunks are also common on the refuge. White-tailed deer are plentiful and are frequently seen by visitors at twilight. Otters, once very scarce, are increasing in the refuge marshes.

Many thousands of visitors come each year to view and photograph refuge wildlife, especially large flocks of geese which are readily seen from the roads. The Blackwater Visitor Center, constructed near the largest goose and duck concentration, provides visitors with the opportunity to watch waterfowl through large picture windows as well as to see displays or watch wildlife movies.

Three other national wildlife refuges are located in Maryland: Susquehanna with 4 acres; Eastern Neck, 2,283 acres; and Martin, 4,313. These provide a diversity of habitat for waterfowl management. All four refuges provide habitat and protection for the rare Delmarva Peninsula fox squirrel.

Research Center

Patuxent Wildlife Research Center, located near Laurel, is the Bureau's eastern headquarters for research on general wildlife problems. The center conducts research on management of wetlands for waterfowl, wildlife management on forest and agricultural lands, control of diseases and parasites of wildlife and the status and distribution of migratory birds. The research program for endangered species of wildlife is also based at Patuxent Center.

A pesticides laboratory at the center studies the effects on wildlife of the vast number of new chemicals being marketed each year for the control of noxious insects and plants.

Other Programs

The Bureau of Sport Fisheries and Wildlife has no fish hatcheries in Maryland, but both trout and warm-water fish are stocked from Federal hatcheries in adjoining States. Largemouth bass, bluegill, and channel catfish are stocked in farm ponds and other warm waters as needed. Maryland also receives trout for stocking public trout streams and cold-water lakes.

Additional information about programs of the Bureau of Sport Fisheries and Wildlife in Maryland may be obtained from the Office of Conservation Education, Bureau of Sport Fisheries and Wildlife, Room 3242, Interior Building, Washington, D.C. 20240.

Office of Water Resources Research

The Water Resources Research Act of 1964, also known as Public Law 88–379 is administered by the Department of the Interior's Office of Water Resources Research (OWRR). The act created one of the newest of the Federal-State programs dealing with natural resources.

The Water Resources Research Center at the University of Maryland is one of 51 such centers or institutes located in each State and Puerto Rico that receive financial support from OWRR to promote research and training in the water resources field.

Federal funding is provided through annual allotments and the center is also authorized to apply for matching grants and other financial support for specific research projects on a competitive basis. The purpose of the center is to encourage and to facilitate research in all aspects of water resources development, management and conservation with particular attention to the most pressing problems of the State.

The College Park center has a number of projects underway. These include research on simulation of water resource systems; effects of temperature on productivity and stability of estuarine communities; improvement of water quality; reduction of stream pollution from farm animal wastes and food-processing plants; sedimentation and turbidity studies; and the use of water recreation facilities. Other significant and pertinent projects responsive to State needs are added as ongoing research is completed or as funds become available.

Students who are employed as research assistants to the well-qualified principal investigators of the approved projects receive valuable training while performing useful research.

The center maintains close contact with other colleges and universities within the State having competence in water resources research and training and keeps advised on local and State water resources research needs.

The two primary products of this program—research results and trained personnel—should be of increasing importance to effective water resources management in Maryland.

Additional information on the activities of the Office of Water Resources Research may be obtained from the Coordinator, Water Resources Research Center, Shriver Laboratory, University of Maryland, College Park, Md. 20742.

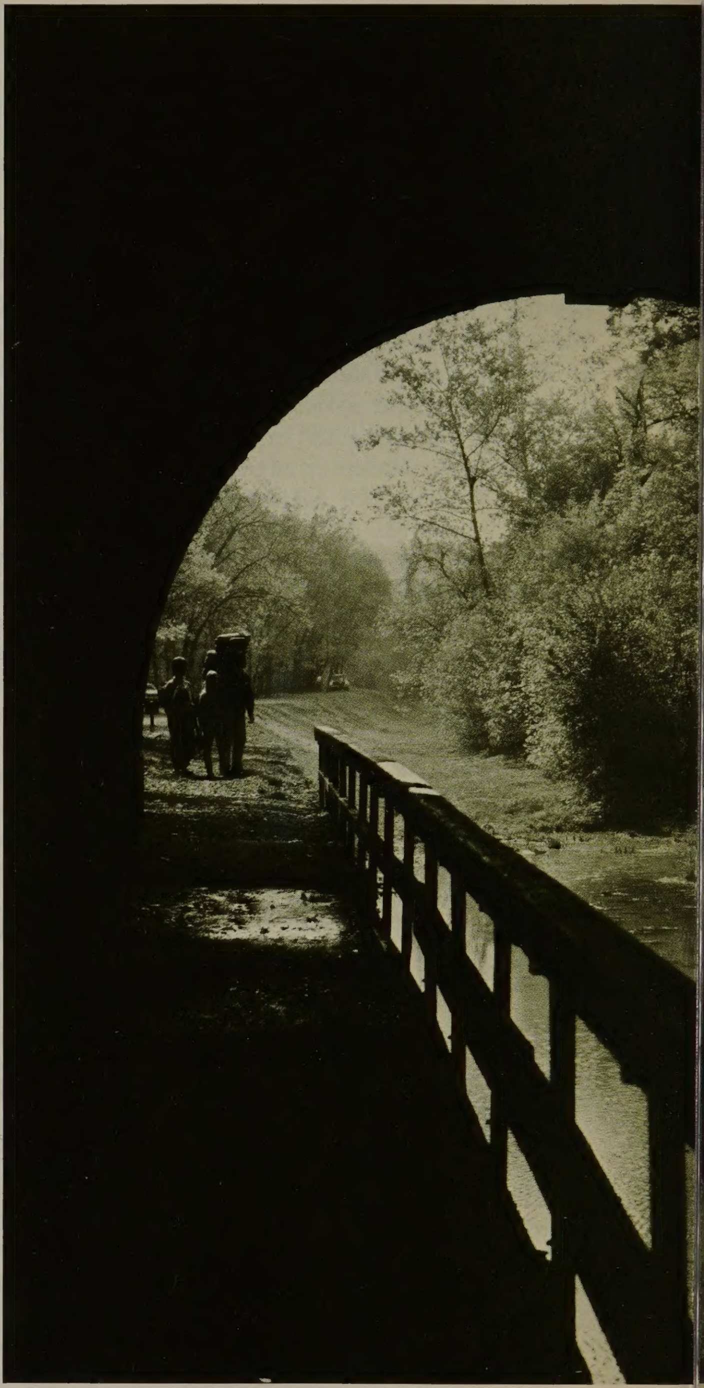
The Future

As we enter the last decades of the 20th century, Americans are becoming more and more conscious of the quality of their lives. Along with sophistication gained from comparative economic wealth has come the realization that the well-being of our country cannot be measured by the gross national product alone.

Because of this maturity, Americans in general and Marylanders in particular must and are re-evaluating their manner of living. They are realizing that clean water, adequate recreational space and intelligent development of our natural resources are vital to national well-being.

To be effective, the belief in wise utilization of natural resources and action to obtain this goal must be widespread; while the rewards for this support are manifold, the punishments for neglect are disastrous.

With the citizens of Maryland and the Nation aware of the great natural resource heritage they have to use wisely and what they stand to lose if they neglect their natural resources, the decision to join the ranks of conservationists should be easy. Conservation, in a phrase, is "the wiser choice."



(Right, front and back covers) No generation before us has been faced with such monumental conservation decisions. But our advanced technology can meet our demands and be the means for implementing our decisions.

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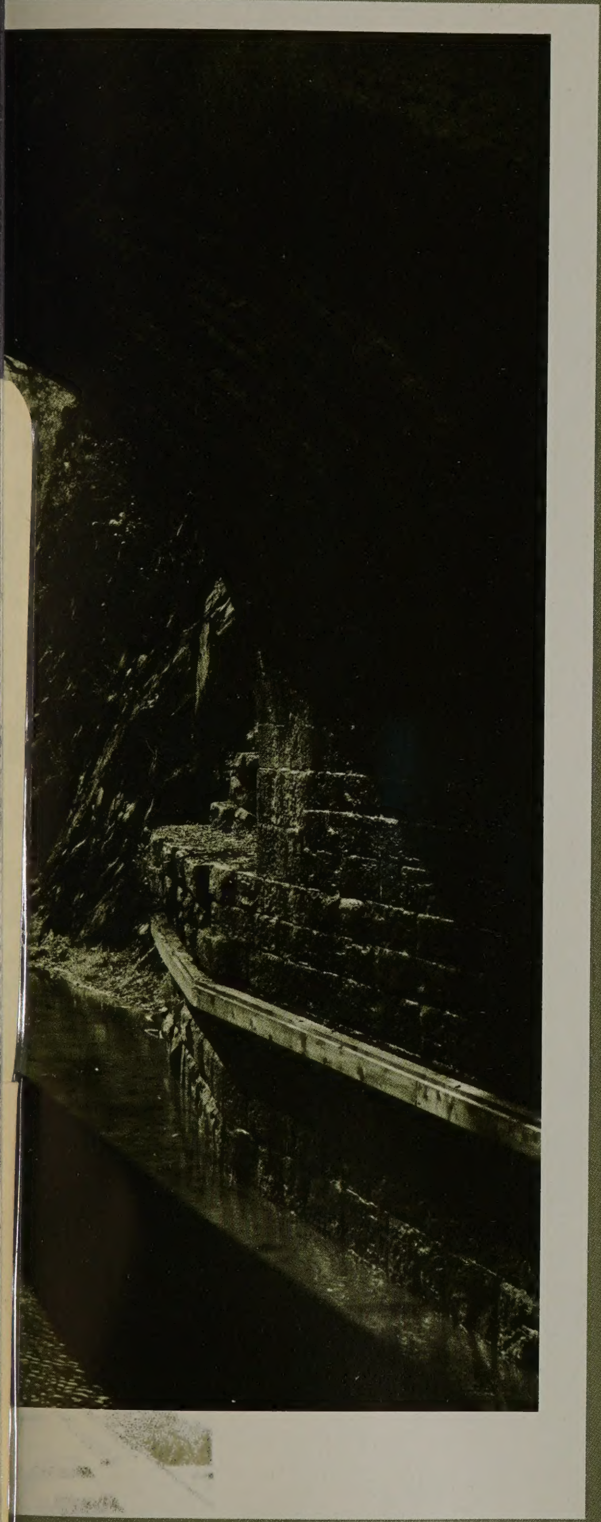

Acknowledgments

The Department of the Interior gratefully acknowledges the cooperation of the following in supplying illustrations for this publication: Bethlehem Steel Company, p. 24; Robert de Gast, p. 13(bottom right); Maryland Department of Forests and Parks, pp. 13(top left), 40 (all); Maryland Historical Society, pp. 10 (right), 19; National Geographic Society, pp. front cover, inside cover(second from bottom), 7(bottom), 8–9(middle), 12(both), 13(top right), 14–15(middle and bottom), 17(left), 26 (left), 26–27(top), 28, 30(right), 31(top), 33; Smithsonian Institution, Bureau of American Ethnology, p. 18; Soil Conservation Service, U.S. Department of Agriculture, pp. inside cover(top), 6(middle left), 29, 30(bottom left); M. E. Warren, pp. inside cover(middle right), 9(right), 26–27(bottom), 36(top), 41(bottom); O. V. Wootten, p. 41(top).

The Department also expresses its appreciation to the U.S. Army Corps of Engineers; Forest Service, U.S. Department of Agriculture; and the Soil Conservation Service, U.S. Department of Agriculture, for assisting with the text.

As the Nation's principal conservation agency, the Department of the Interior has basic responsibilities for water, fish, wildlife, mineral, land, park, and recreational resources. Indian and Territorial affairs are other major concerns of America's "Department of Natural Resources."

The Department works to assure the wisest choice in managing all our resources so each will make its full contribution to a better United States—now and in the future.

U.S. GOVERNMENT PRINTING OFFICE : 1969—O-314-177

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U.S. Government Printing Office
Washington, D.C. 20402 - Price 75 cents